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MS-600

Building Applications and Solutions with Microsoft 365 Core Services

Version 1.0

Testlet 1

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To start the case study

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ADatum Corporation develops a software as a service (SaaS) application named E-invoicing.

Existing Environment

Application Architecture

E-invoicing consists of a single-page application (SPA) and a backend web service that provides invoice management and processing functionality.

E-invoicing stores all the details of each invoicing operation in a backend cloud database. E-invoicing generates invoices in PDF format and provides users with the ability to download the PDF after it is generated. Each invoice has a unique identifier named invoiceid.

The users have a common workflow where they sign in to E-invoicing, and then open E-invoicing in multiple tabs of a web browser so they can use different parts of the application simultaneously. **Security**

Architecture

ADatum uses the principle of least privilege whenever possible. ADatum always uses the latest libraries and integration endpoints.

Requirements

Business Goals

ADatum wants to integrate E-invoicing, Azure Active Directory (Azure AD), and Microsoft Graph so that their customers can leverage Microsoft Office 365 services directly from within E-invoicing. **Planned**

Changes

ADatum plans to add the following capabilities to E-invoicing:

▪ Email the generated invoices to customers on behalf of the current signed-in user. Any emails generated by the system will contain the invoiced. ▪
Perform as many operations as possible in the browser without having to leave the E-invoicing application. ▪ Use Azure AD to manage identities,
authentication, and authorization. ▪ Display all emails that contain a specific invoiceid.

Technical Requirements

ADatum identifies the following technical requirements for the planned E-invoicing capabilities:

▪ Ensure that all operations performed by E-invoicing against Office 365 are initiated by a user. Require that the user authorize E-invoicing to access the Office 365 data the first time the application attempts to access Office 365 data on the user's behalf.
▪ Send scheduled reminders to customers before a payment due date. Create an administration user interface to enable the scheduled reminders.
▪ Implement Microsoft Graph change notifications to detect emails from vendors that arrive in a designated mailbox. ▪ Implement single sign-on
(SSO) and minimize login prompts across browser tabs.
▪ Secure access to the backend web service by using Azure AD. ▪
Ensure that all solutions use secure coding practices.

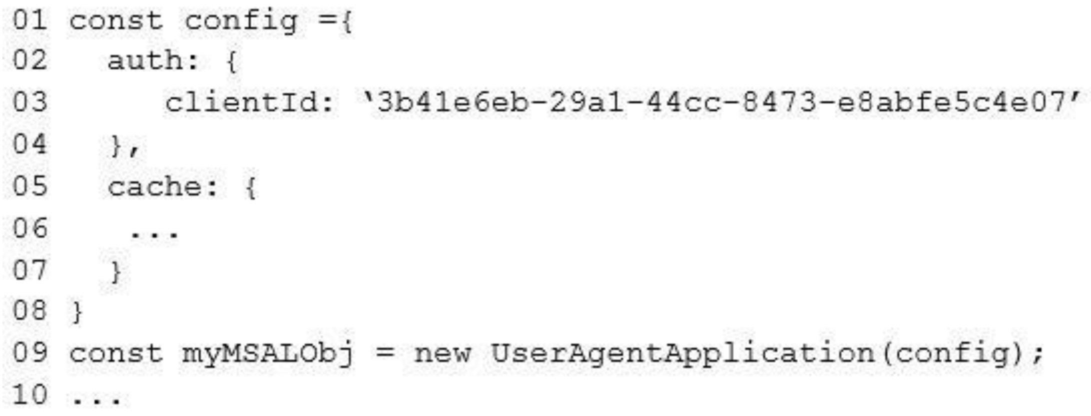
Backend Security Planned Changes

ADatum wants to use custom application roles to map user functionality to permissions granted to users.

E-invoicing will have internal logic that will dynamically identify whether the user should be allowed to call the backend API.

SSO JavaScript Script

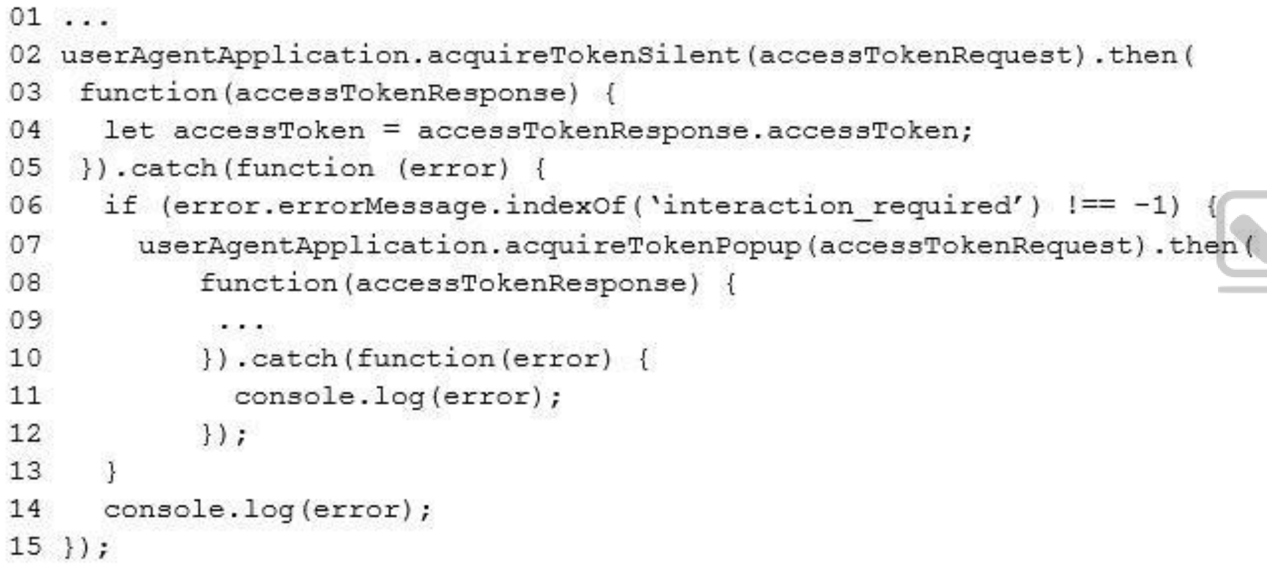
You plan to implement SSO with Microsoft Authentication Library (MSAL) by using the following code:



```
const config ={
  auth: {
     clientId: '3b41e6eb-29a1-44cc-8473-e8abfe5c4e07'
  },
  cache: {
   ...
  }
}
const myMSALObj = new UserAgentApplication(config);
...
```

Access Token JavaScript Script

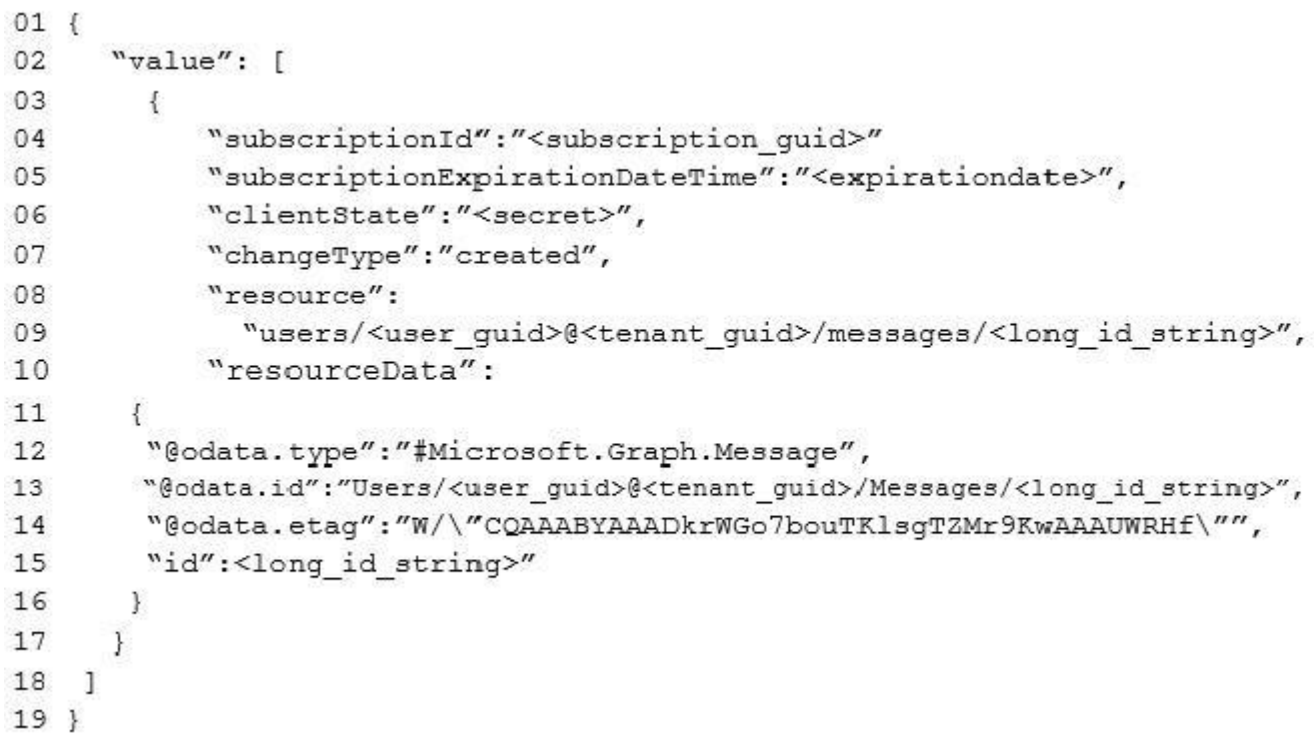
You have the following JavaScript code to obtain an access token.



```
...
userAgentApplication.acquireTokenSilent(accessTokenRequest).then(
 function(accessTokenResponse) {
   let accessToken = accessTokenResponse.accessToken;
 }).catch(function (error) {
   if (error.errorMessage.indexOf('interaction_required') !== -1) {
     userAgentApplication.acquireTokenPopup(accessTokenRequest).then(
         function(accessTokenResponse) {
          ...
         }).catch(function(error) {
           console.log(error);
         });
   }
   console.log(error);
});
```

Change Notification JSON

You have the following JSON message that will be sent by the Microsoft Graph service to detect the vendor emails.



```
{
  "value": [
    {
        "subscriptionId":"<subscription_guid>"
        "subscriptionExpirationDateTime":"<expirationdate>",
        "clientState":"<secret>",
        "changeType":"created",
        "resource":
          "users/<user_guid>@<tenant_guid>/messages/<long_id_string>",
        "resourceData":
     {
      "@odata.type":"#Microsoft.Graph.Message",
      "@odata.id":"Users/<user_guid>@<tenant_guid>/Messages/<long_id_string>",
      "@odata.etag":"W/\"CQAAABYAAADkrWGo7bouTKlsgTZMr9KwAAAUWRHf\"",
      "id":<long_id_string>"
     }
   }
 ]
}
```

QUESTION 1 You need to configure the initial login request in the access token JavaScript script.

Which code segment should you insert at line 01?

A. `const scopes = ['https://graph.microsoft.com/.default'];`

B. `const accessTokenRequest = {`
`};`

C. `const scopes = ['https://graph.microsoft.com/Files.Read.All',`
`'https://graph.microsoft.com/Mail.Send.All'];` D. `const`
`accessTokenRequest = {      scopes:`
`['https://graph.microsoft.com/Files.ReadWrite',`
`'https://graph.microsoft.com/Mail.Send']`
`};`

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Scenario: ADatum identifies the following technical requirements for the planned E-invoicing capabilities:

- Ensure that all operations performed by E-invoicing against Office 365 are initiated by a user. Require that the user authorize E-invoicing to access the Office 365 data the first time the application attempts to access Office 365 data on the user's behalf.

Reference: https://docs.microsoft.com/en-us/graph/permissions-reference

QUESTION 2
DRAG DROP

You need to protect the backend web service to meet the technical requirements.

Which four actions should you perform in sequence? To answer, move the actions from the list of actions to the answer area and arrange them in the correct order.

Select and Place:
Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Here is a quick overview of the steps:
Step 1: Register an application in Azure AD for the backend web service
Register an application (backend-app) in Azure AD to represent the API.

Step 2: Set the App ID URI for the backend service application registration
When the application is created (step 1) select Expose an API and click on Save and continue to create an Application ID URI.

Step 3: Defend the scopes in the backend web service application registration
In the Add a scope page, create a new scope supported by the API. (e.g., Read) then click on Add scope to create the scope. Repeat this step to add all scopes supported by your API.

Step 4: Register an application in Azure AD for E-invoicing.
Step 4.1 Register another application in Azure AD to represent a client application
Step 4.2 Now that you have registered two applications to represent the API and the Developer Console, you need to grant permissions to allow the client-app to call the backend-app.

Scenario:
Secure access to the backend web service by using Azure AD
E-invoicing will have internal logic that will dynamically identify whether the user should be allowed to call the backend API.

Reference: https://docs.microsoft.com/en-us/azure/api-management/api-management-howto-protect-backend-with-aad

QUESTION 3 You need to complete the MSAL.js code for SSO.

Which code segment should you insert at line 06?

A. `storeAuthStateInCookie: false`
B. `storeAuthStateInCookie: true`
C. `cacheLocation: ‘localStorage’`
D. `cacheLocation: ‘sessionStorage’`

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Scenario: Implement single sign-on (SSO) and minimize login prompts across browser tabs.

When your application is open in multiple tabs and you first sign in the user on one tab, the user is also signed in on the other tabs without being prompted. MSAL.js caches the ID token for the user in the browser localStorage and will sign the user in to the application on the other open tabs.

By default, MSAL.js uses sessionStorage which does not allow the session to be shared between tabs. To get SSO between tabs, make sure to set the cacheLocation in MSAL.js to localStorage.

Reference: https://docs.microsoft.com/bs-latn-ba/Azure/active-directory/develop/msal-js-sso

Question Set 2

QUESTION 1

HOTSPOT

You are developing an interactive invoicing application that will be used by end users. The application will have the following features:

▪ Save invoices generated by a user to the user’s Microsoft OneDrive. ▪
Email daily automated reminders.

You need to identify which permissions to grant for the application features. The solution must use the principle of least privilege.

Which permission should you grant for each feature? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Microsoft identity platform supports two types of permissions: delegated permissions and application permissions.

Box 1: Delegated
▪ Delegated permissions are used by apps that have a signed-in user present. For these apps, either the user or an administrator consents to the permissions that the app requests, and the app is delegated permission to act as the signedin user when making calls to the target resource.

Box 2: Application
▪ Application permissions are used by apps that run without a signed-in user present; for example, apps that run as background services or daemons. Application permissions can only be consented by an administrator.

Reference: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-permissions-and-consent

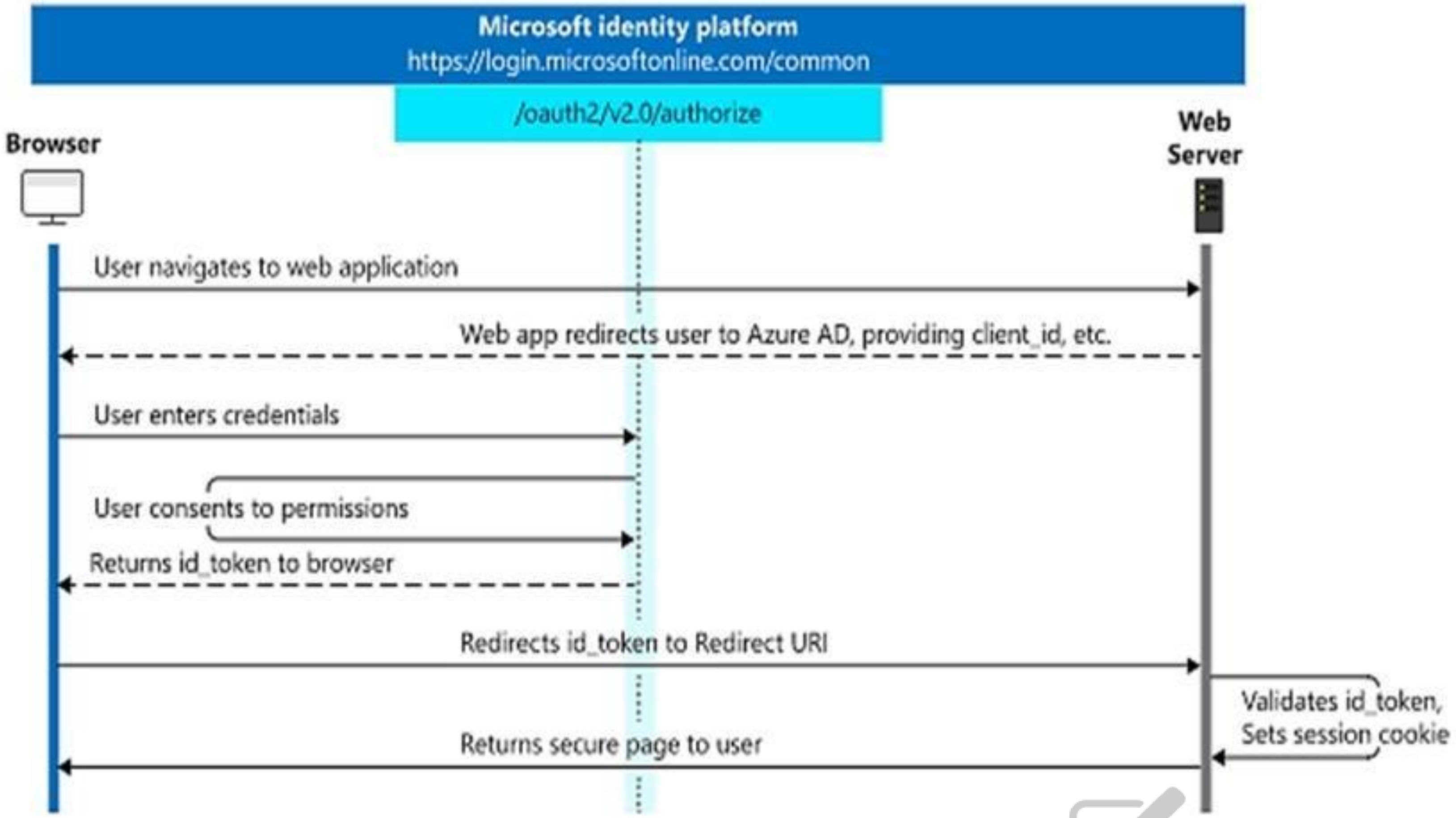
QUESTION 2 You need to develop a server-based web app that will be registered with the Microsoft identity platform. The solution must ensure that the app can perform operations on behalf of the user.

Which type of authorization flow should you use?

A. authorization code
B. refresh token
C. resource owner password
D. device code

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
In web server apps, the sign-in authentication flow takes these high-level steps:


Microsoft identity platform
https://login.microsoftonline.com/common
/oauth2/v2.0/authorize
Browser
Web Server
User navigates to web application
Web app redirects user to Azure AD, providing client_id, etc.
User enters credentials
User consents to permissions
Returns id_token to browser
Redirects id_token to Redirect URI
Validates id_token, Sets session cookie
Returns secure page to user

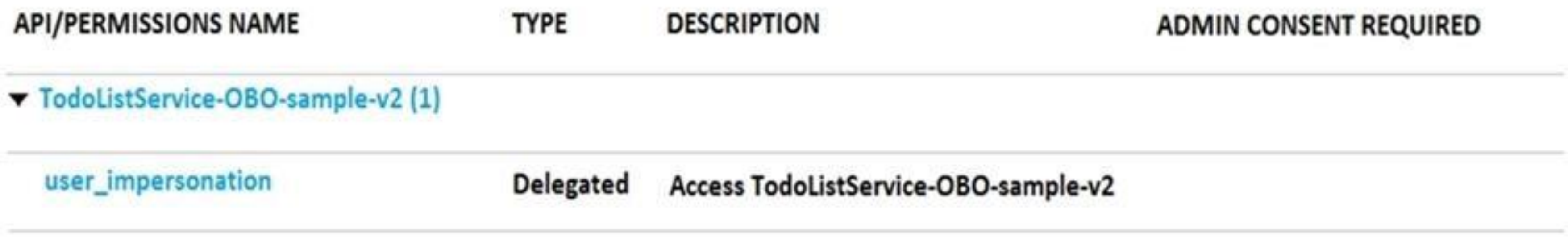
You can ensure the user's identity by validating the ID token with a public signing key that is received from the Microsoft identity platform endpoint. A session cookie is set, which can be used to identify the user on subsequent page requests.

In addition to simple sign-in, a web server app might need to access another web service, such as a REST API. In this case, the web server app engages in a combined OpenID Connect and OAuth 2.0 flow, by using the OAuth 2.0 authorization code flow.

Reference: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-app-types

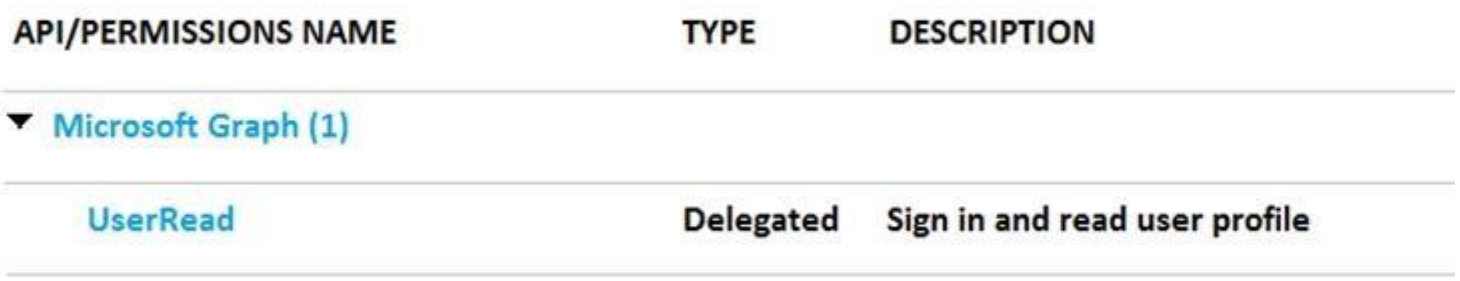
QUESTION 3
You have a single-page application (SPA) named TodoListSPA and a server-based web app named TodoListService.

The permissions for the TodoList SPA API are configured as shown in the TodoList SPA exhibit. (Click the TodoListSPA tab.)



API/PERMISSIONS NAME	TYPE	DESCRIPTION	ADMIN CONSENT REQUIRED
▼ TodoListService-OBO-sample-v2 (1)			
user_impersonation	Delegated	Access TodoListService-OBO-sample-v2	

The permissions for the TodoListService API are configured as shown in the TodoListService exhibit. (Click the TodoListService tab.)



API/PERMISSIONS NAME	TYPE	DESCRIPTION
▼ Microsoft Graph (1)		
UserRead	Delegated	Sign in and read user profile

You need to ensure that TodoListService can access a Microsoft OneDrive file of the signed-in user. The solution must use the principle of least privilege.

Which permission should to grant?

A. the Sites.Read.All delegated permission for TodoListService
B. the Sites.Read.All delegated permission for TodoListSpa
C. the Sites.Read.All application permission for TodoListSPA
D. the Sites.Read.All application permission for TodoListService

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
A client application gains access to a resource server by declaring permission requests. Two types are available:

"Delegated" permissions, which specify scope-based access using delegated authorization from the signed-in resource owner, are presented to the resource at run-time as "scp" claims in the client's access token. "Application" permissions, which specify role-based access using the client application's credentials/identity, are presented to the resource at run-time as "roles" claims in the client's access token.

Reference: https://docs.microsoft.com/en-us/azure/active-directory/develop/developer-glossary#permissions

QUESTION 4
You are building a server-based web app that will use OAuth2 and will be registered with the Microsoft identity platform.

Which two values does the app require to obtain tokens from the Azure Active Directory (Azure AD) authorization endpoint? Each correct answer presents part of the solution.

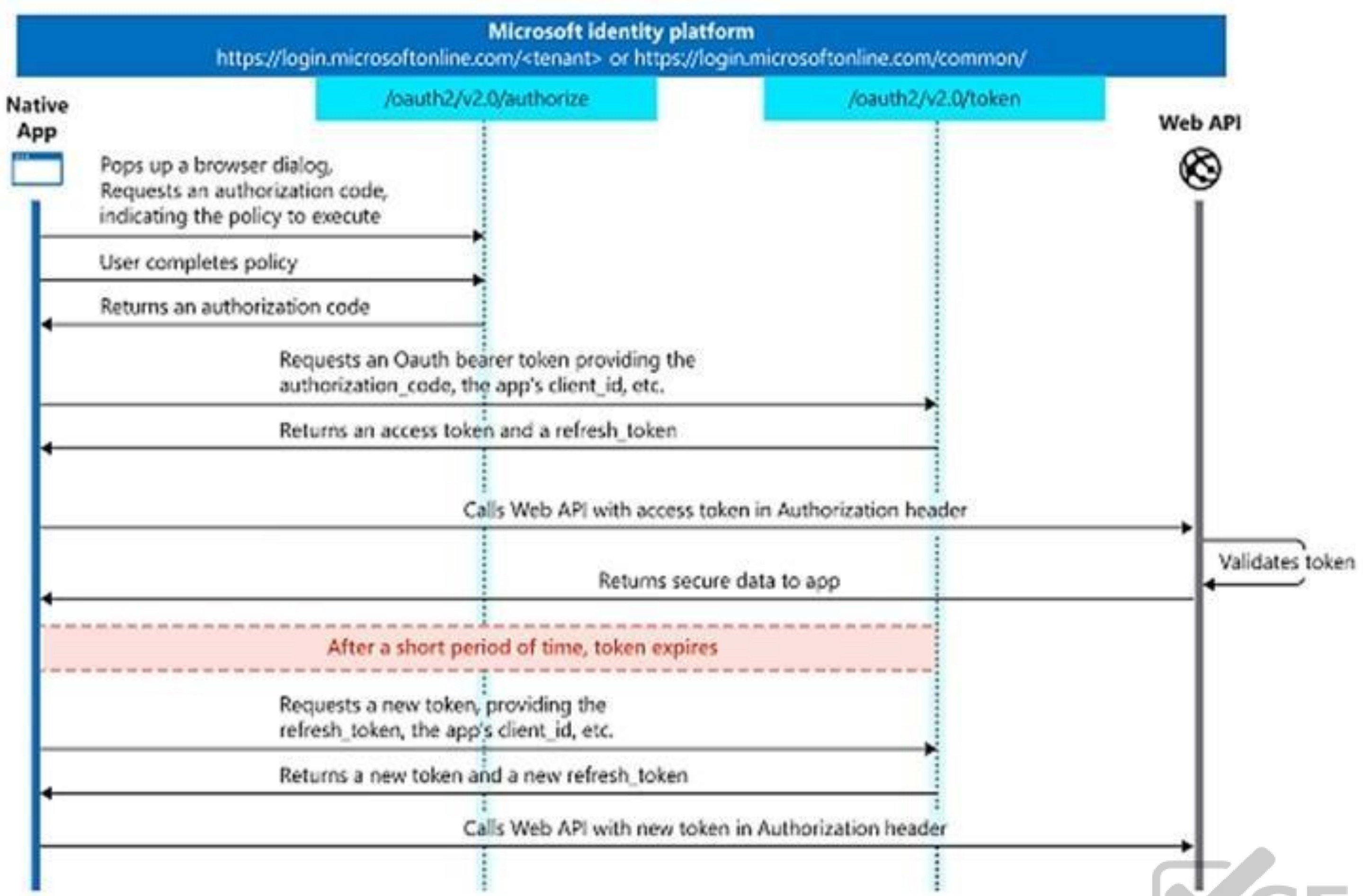
NOTE: Each correct selection is worth one point.

A. the tenant ID
B. the context token
C. the application ID
D. the application secret
E. the authorization code

Correct Answer: CE
Section: [none]
Explanation

Explanation/Reference:
Explanation:
C: The required client_id is the Application (client) ID that the Azure portal – App registrations experience assigned to your app.

E: The authorization code flow begins with the client directing the user to the /authorize endpoint.


Microsoft identity platform
https://login.microsoftonline.com/<tenant> or https://login.microsoftonline.com/common/
/oauth2/v2.0/authorize
/oauth2/v2.0/token
Native App
Web API
Pops up a browser dialog, Requests an authorization code, indicating the policy to execute
User completes policy
Returns an authorization code
Requests an Oauth bearer token providing the authorization_code, the app's client_id, etc.
Returns an access token and a refresh_token
Calls Web API with access token in Authorization header
Validates token
Returns secure data to app
After a short period of time, token expires
Requests a new token, providing the refresh_token, the app's client_id, etc.
Returns a new token and a new refresh_token
Calls Web API with new token in Authorization header

Reference: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-oauth2-auth-code-flow

QUESTION 5
HOTSPOT

You are developing a single-page application (SPA).

You plan to access user data from Microsoft Graph by using an AJAX call.

You need to obtain an access token by the Microsoft Authentication Library (MSAL). The solution must minimize authentication prompts.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: loginPopup

Box 2: acquireTokenSilent
The pattern for acquiring tokens for APIs with MSAL.js is to first attempt a silent token request by using the acquireTokenSilent method. When this method is called, the library first checks the cache in browser storage to see if a valid token exists and returns it. When no valid token is in the cache, it sends a silent token request to Azure Active Directory (Azure AD) from a hidden iframe. This method also allows the library to renew tokens.

Box 3: acquireTokenPopup
//AcquireToken Failure, send an interactive request.

Example:

```
userAgentApplication.loginPopup(applicationConfig.graphScopes).then(function (idToken) {
        //Login Success
        userAgentApplication.acquireTokenSilent(applicationConfig.graphScopes).then(function (accessToken) {
          //AcquireToken Success
updateUI();
        }, function (error) {
          //AcquireToken Failure, send an interactive request.
userAgentApplication.acquireTokenPopup(applicationConfig.graphScopes).then(function (accessToken) {
updateUI();          }, function (error) {
            console.log(error);
          });
        })
      }, function (error) {
        console.log(error);
});
```

Reference: https://github.com/AzureAD/microsoft-authentication-library-for-js/issues/339

QUESTION 6
HOTSPOT

You are developing an application that will run as an overnight background service on a server. The service will access web-hosted resources by using the application's identity and the OAuth 2.0 client credentials grant flow.

You register the application and grant permissions. The tenant administrator grants admin consent to the application.

You need to get the access token from Azure Active Directory (Azure AD).

Which URI should you use for the POST request? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

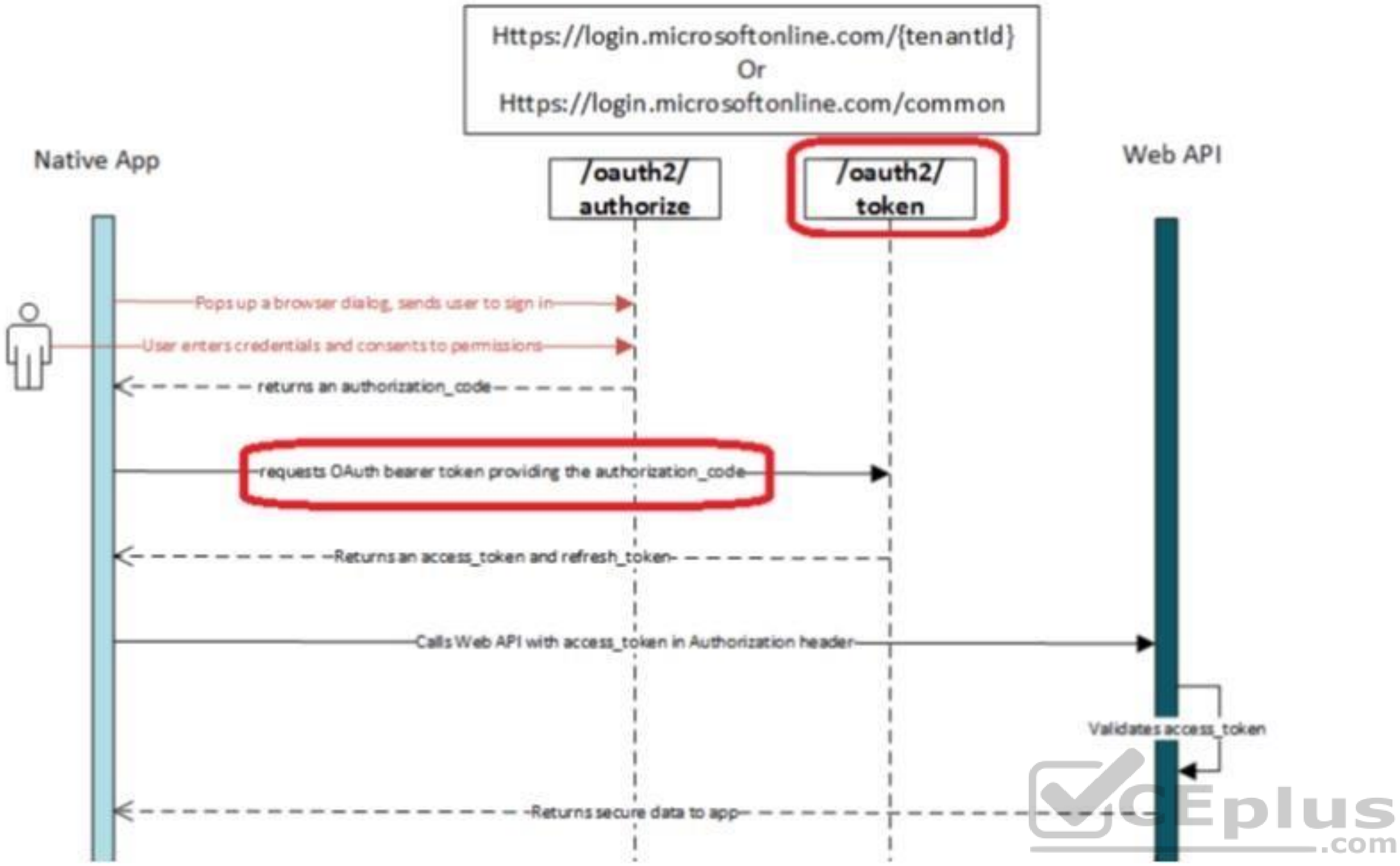
Explanation/Reference:
Explanation:
Oauth2 client_id client_secret
The authorization code flow begins with the client directing the user to the /authorize endpoint.

Box 1: token
Use the authorization code to request an access token.
Now that you've acquired an authorization code and have been granted permission by the user, you can redeem the code for an access token to the desired resource, by sending a POST request to the /token endpoint:

Box 2: authorization_code
Use the authorization code to request an access token.
Example:
// Line breaks for legibility only

```
POST /{tenant}/oauth2/token HTTP/1.1
Host: https://login.microsoftonline.com
Content-Type: application/x-www-form-urlencoded
grant_type=authorization_code
...etc.
```

Note: At a high level, the entire authorization flow for an application looks a bit like this:


Https://login.microsoftonline.com/{tenantId}
Or
Https://login.microsoftonline.com/common
Native App
/oauth2/ authorize
/oauth2/ token
Web API
Pops up a browser dialog, sends user to sign in
User enters credentials and consents to permissions
returns an authorization_code
requests OAuth bearer token providing the authorization_code
Returns an access_token and refresh_token
Calls Web API with access_token in Authorization header
Validates access_token
Returns secure data to app

Reference: https://docs.microsoft.com/en-us/azure/active-directory/develop/v1-protocols-oauth-code

QUESTION 7
You develop a web API named WebApi1.

When validating a token received from a client application, WebApi1 receives a MsalUiRequiredException exception from Azure Active Directory (Azure AD).

You need to formulate the response that WebApi1 will return to the client application.

Which HTTP response should you send?

A. HTTP 307 Temporary Redirect
B. HTTP 400 Bad Request
C. HTTP 403 Forbidden
D. HTTP 412 Precondition Failed

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
The HyperText Transfer Protocol (HTTP) 412 Precondition Failed client error response code indicates that access to the target resource has been denied. This happens with conditional requests on methods other than GET or HEAD when the condition defined by the If-Unmodified-Since or If-None-Match headers is not fulfilled. In that case, the request, usually an upload or a modification of a resource, cannot be made and this error response is sent back.

MsalUiRequiredException

The "Ui Required" is proposed as a specialization of MsalServiceException named MsalUiRequiredException. This means you have attempted to use a non-interactive method of acquiring a token (e.g. AcquireTokenSilent), but MSAL could not do it silently. this can be because:

▪ you need to sign-in ▪ you need to consent ▪ you need to go through a multi-factor authentication experience. The remediation is to call AcquireTokenInteractive

```
try
{
 app.AcquireTokenXXX(scopes, account)
   .WithYYYY(...)
   .ExecuteAsync()
}
catch(MsalUiRequiredException ex)
{
 app.AcquireTokenInteractive(scopes)
    .WithAccount(account)
    .WithClaims(ex.Claims)
    .ExcecuteAsync();
}
```

Incorrect Answers:
A: A 307 Temporary Redirect message is an HTTP response status code indicating that the requested resource has been temporarily moved to another URI , as indicated by the special Location header returned within the response

B: The 400 Bad Request Error is an HTTP response status code that indicates that the server was unable to process the request sent by the client due to invalid syntax.

C: The 403 Forbidden Error happens when the web page (or other resource) that you're trying to open in your web browser is a resource that you're not allowed to access.

References: https://docs.microsoft.com/en-us/azure/active-directory/develop/msal-handling-exceptions https://github.com/AzureAD/microsoft-authentication-library-for-dotnet/wiki/exceptions

QUESTION 8 You have a backend service that will access the Microsoft Graph API.

You need to configure the service to authenticate by using the most secure authentication method.

What should you configure the service to use?

A. a certificate
B. a client secret
C. a shared key
D. a hash

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
You can authenticate to the Graph API with two primary methods: AppId/Secret and certificate based authentication. Certificate is the preferred and more secure way of authenticating.

Reference: https://adamtheautomator.com/microsoft-graph-api-powershell/

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E-invoicing stores all the details of each invoicing operation in a backend cloud database. E-invoicing generates invoices in PDF format and provides users with the ability to download the PDF after it is generated. Each invoice has a unique identifier named invoiceid.

The users have a common workflow where they sign in to E-invoicing, and then open E-invoicing in multiple tabs of a web browser so they can use different parts of the application simultaneously. **Security**

Architecture

ADatum uses the principle of least privilege whenever possible. ADatum always uses the latest libraries and integration endpoints.

Requirements

Business Goals

ADatum wants to integrate E-invoicing, Azure Active Directory (Azure AD), and Microsoft Graph so that their customers can leverage Microsoft Office 365 services directly from within E-invoicing. **Planned**

Changes

ADatum plans to add the following capabilities to E-invoicing:

▪ Email the generated invoices to customers on behalf of the current signed-in user. Any emails generated by the system will contain the invoiced. ▪
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ADatum identifies the following technical requirements for the planned E-invoicing capabilities:

▪ Ensure that all operations performed by E-invoicing against Office 365 are initiated by a user. Require that the user authorize E-invoicing to access the Office 365 data the first time the application attempts to access Office 365 data on the user's behalf.
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Ensure that all solutions use secure coding practices.

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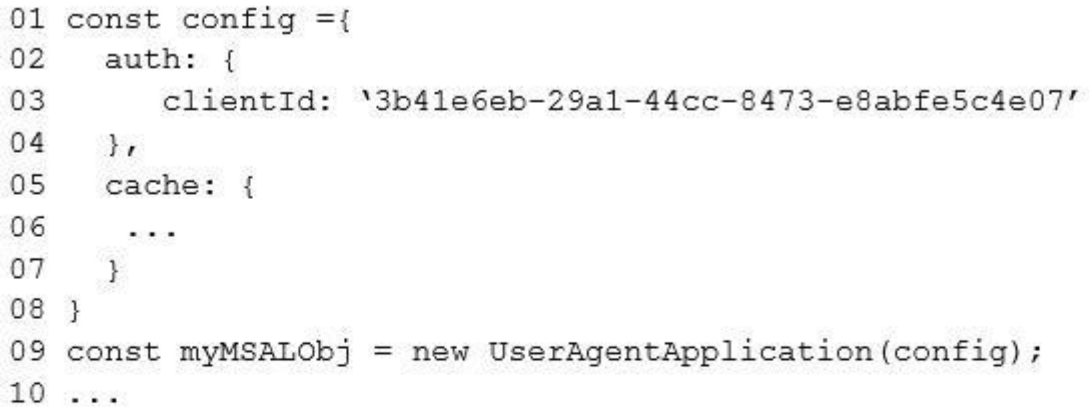
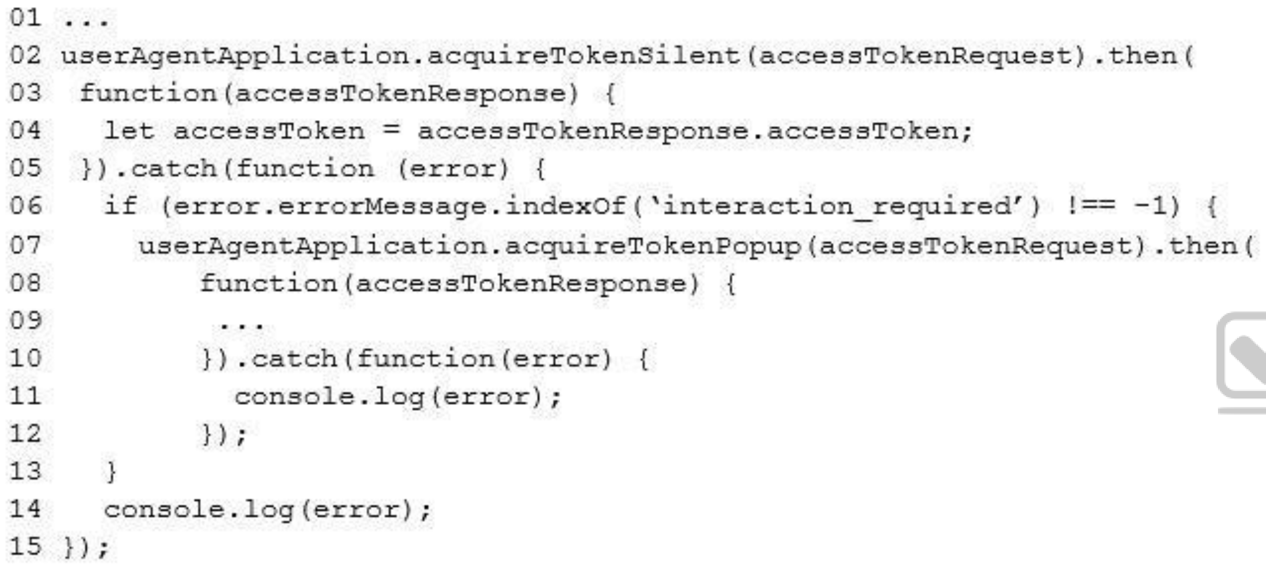


```
const config ={
  auth: {
     clientId: ‘3b41e6eb-29a1-44cc-8473-e8abfe5c4e07’
  },
  cache: {
   ...
  }
}
const myMSALObj = new UserAgentApplication(config);
...
```

Access Token JavaScript Script

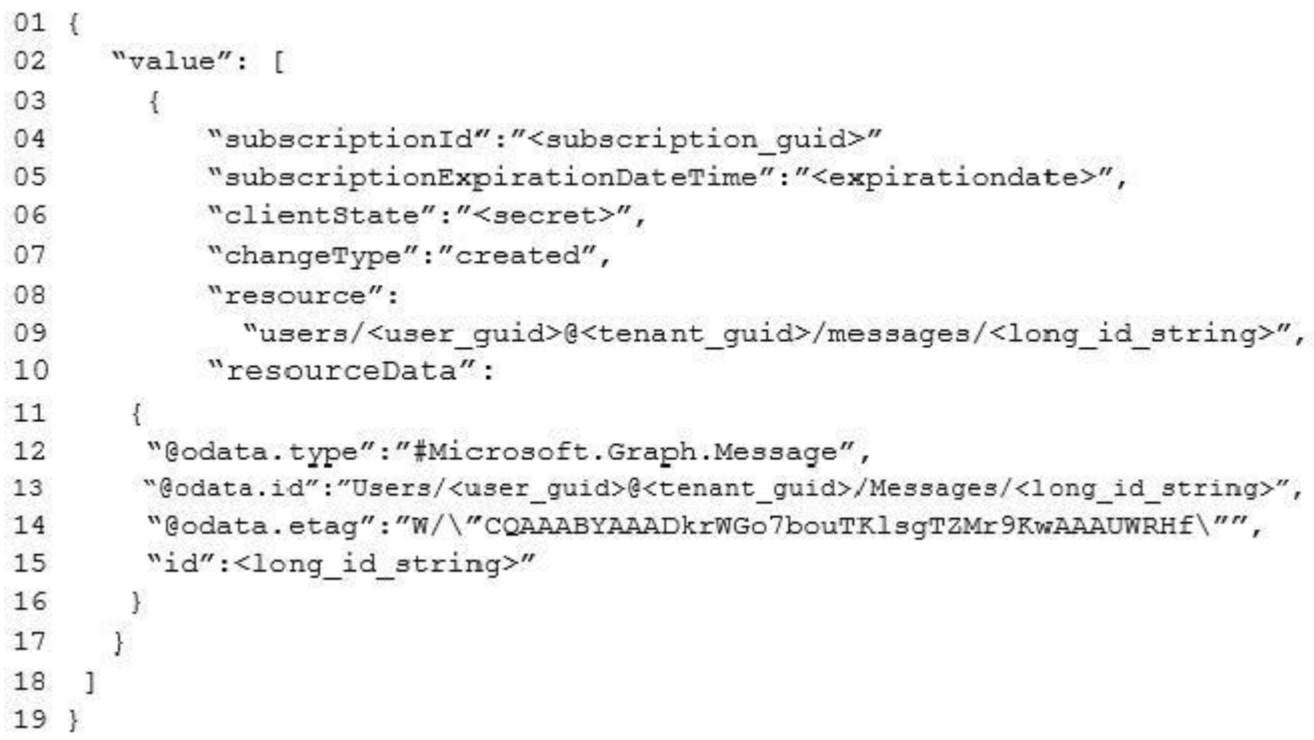
You have the following JavaScript code to obtain an access token.



```
...
userAgentApplication.acquireTokenSilent(accessTokenRequest).then(
 function(accessTokenResponse) {
  let accessToken = accessTokenResponse.accessToken;
 }).catch(function (error) {
  if (error.errorMessage.indexOf(‘interaction_required’) !== -1) {
    userAgentApplication.acquireTokenPopup(accessTokenRequest).then(
        function(accessTokenResponse) {
         ...
        }).catch(function(error) {
          console.log(error);
        });
  }
  console.log(error);
});
```

Change Notification JSON

You have the following JSON message that will be sent by the Microsoft Graph service to detect the vendor emails.



```
{
  "value": [
    {
        "subscriptionId":"<subscription_guid>"
        "subscriptionExpirationDateTime":"<expirationdate>",
        "clientState":"<secret>",
        "changeType":"created",
        "resource":
          "users/<user_guid>@<tenant_guid>/messages/<long_id_string>",
        "resourceData":
     {
      "@odata.type":"#Microsoft.Graph.Message",
      "@odata.id":"Users/<user_guid>@<tenant_guid>/Messages/<long_id_string>",
      "@odata.etag":"W/\"CQAAABYAAADkrWGo7bouTKlsgTZMr9KwAAAUWRHf\"",
      "id":<long_id_string>"
     }
    }
  ]
}
```

QUESTION 1 How can you validate that the JSON notification message is sent from the Microsoft Graph service?

A. The ClientState must match the value provided when subscribing.
B. The user_guid must map to a user ID in the Azure AD tenant of the customer.
C. The tenant ID must match the tenant ID of the customer's Office 365 tenant.
D. The subscription ID must match the Azure subscription used by ADatum.

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
clientState specifies the value of the clientState property sent by the service in each notification. The maximum length is 128 characters. The client can check that the notification came from the service by comparing the value of the clientState property sent with the subscription with the value of the clientState property received with each notification.

Note: A subscription allows a client app to receive notifications about changes to data in Microsoft Graph.

Reference: https://docs.microsoft.com/en-us/graph/api/resources/subscription

Question Set 2

QUESTION 1 You have an application that uses the Microsoft Graph API.

You need to configure the application to retrieve the groups to which the current signed-in user belongs. The results must contain the extended priorities of the groups.

Which URI should you use?

A. `https://graph.microsoft.com/v1.0/me/getMemberObjects`
B. `https://graph.microsoft.com/v1.0/me/getMemberGroups`
C. `https://graph.microsoft.com/v1.0/me/memberOf`

D. `https://graph.microsoft.com/v1.0/me/checkMemberGroups`

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Get member groups returns all the groups that the specified user, group, or directory object is a member of. This function is transitive. Reference:

https://docs.microsoft.com/en-us/graph/api/directoryobject-getmembergroups

QUESTION 2
HOTSPOT

You are developing an Azure function to provision a team in Microsoft Teams.

You need to create a group named Project A, add a classification of Private to the group, and then convert Project A to a team group.

How should you complete the REST requests? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: post
You need to create a group named Project A.

The following example creates an Office 365 group.
POST https://graph.microsoft.com/v1.0/groups
Content-type: application/json
Content-length: 244

```
{
  "description": "Self help community for library",
  "displayName": "Library Assist",
  "groupTypes": [
    "Unified"
  ],
  "mailEnabled": true,
  "mailNickname": "library",
  "securityEnabled": false

}
```

Box 2: PATCH Add a classification of
Private to the group.

You can set the classification property in a PATCH request for the group, if do not set it in the initial POST request that creates the group.

Box 3: put
Then convert Project A to a team group.
Syntax: PUT /groups/{id}/team

References: https://docs.microsoft.com/en-us/graph/api/group-post-groups https://docs.microsoft.com/en-us/graph/api/resources/group https://docs.microsoft.com/en-us/graph/api/team-put-teams

QUESTION 3
DRAG DROP

You are developing a web app that will display emails from the Microsoft 365 mailbox of the current signed-in user.

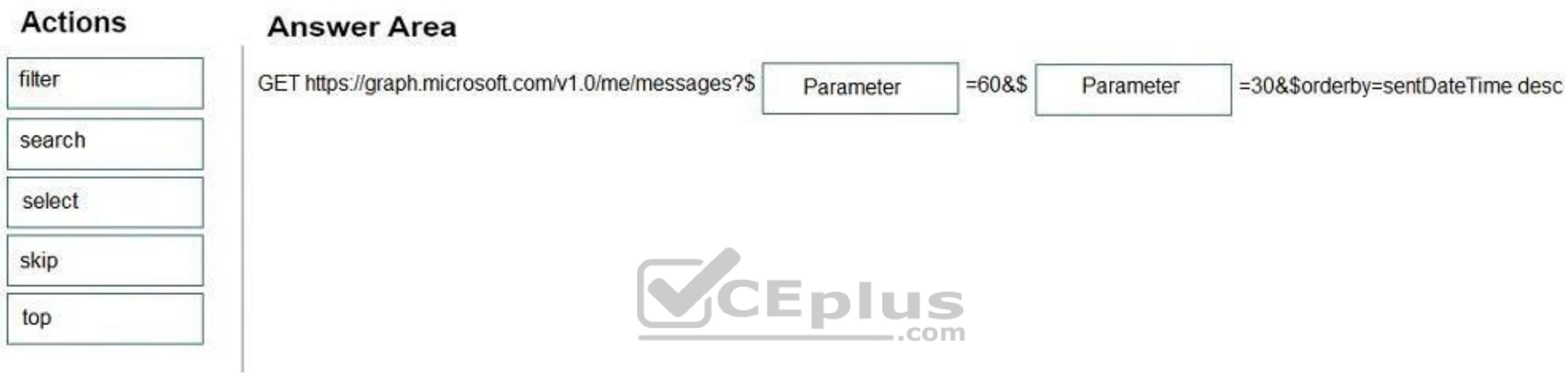
For performance reasons, you do not want all the emails to be loaded simultaneously, rather page-by-page as the user navigates the app.

You plan to display 30 emails per page. The most recent emails must be displayed first.

How should you complete the query parameters for the REST request to display the third page of emails? To answer, drag the appropriate query parameters to the correct targets. Each query parameter may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



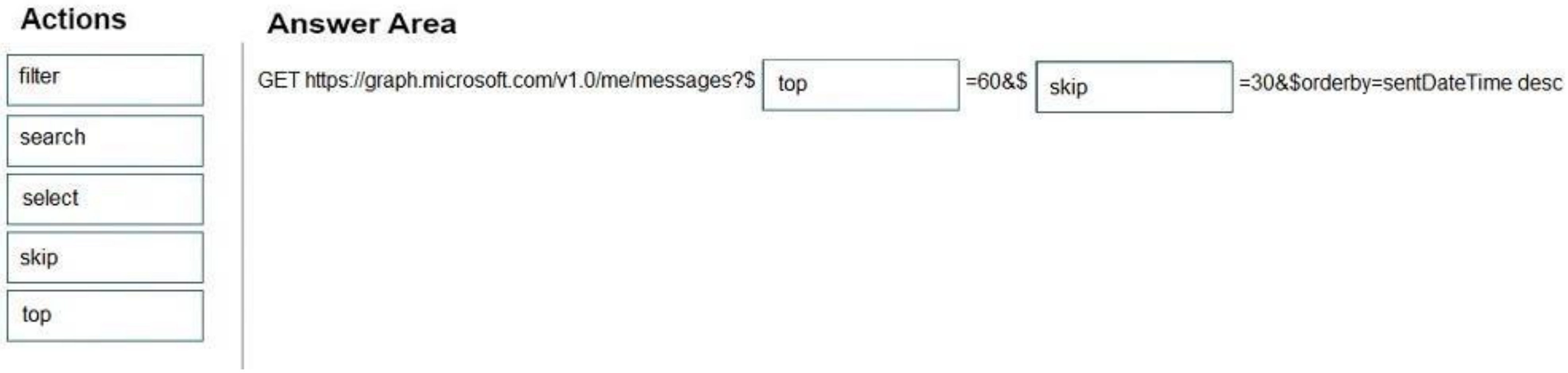
Actions

- filter
- search
- select
- skip
- top

Answer Area

GET https://graph.microsoft.com/v1.0/me/messages?$ Parameter =60&$ Parameter =30&$orderby=sentDateTime desc

Correct Answer:



Actions

- filter
- search
- select
- skip
- top

Answer Area

GET https://graph.microsoft.com/v1.0/me/messages?$ top =60&$ skip =30&$orderby=sentDateTime desc

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: top
Number of items to return in a result

Box 2: skip
$skip Indexes into a result set. Also used by some APIs to implement paging and can be used together with $top to manually page results.

Incorrect Answers:
▪ $select
To specify a different set of properties to return than the default set provided by the Graph, use the $select query option. The $select option allows for choosing a subset or superset of the default set returned. For example, when retrieving your messages, you might want to select that only the from and subject properties of messages are returned.

▪ $search
To restrict the results of a request that match a search criterion, use the $search query parameter. You cannot use $filter or $orderby in a $search request.

Reference: https://developer.microsoft.com/en-us/graph/docs/overview/query_parameters

QUESTION 4
HOTSPOT

You need to retrieve a list of the last 10 files that the current user opened from Microsoft OneDrive. The response must contain only the file ID and the file name.

Which URI should you use to retrieve the results? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

"graph.microsoft.com" "drive" onedrive

Box 1: root
/root - The root folder for the drive.

Box 2: $select=id,name
To specify a different set of properties to return than the default set provided by the Graph, use the $select query option. The $select option allows for choosing a subset or superset of the default set returned. For example, when retrieving your messages, you might want to select that only the from and subject properties of messages are returned. References: https://docs.microsoft.com/en-us/onedrive/developer/rest-api/concepts/addressing-driveitems
https://developer.microsoft.com/en-us/graph/docs/overview/query_parameters

QUESTION 5
You are developing a human resources application that will show users where they are in their company's organization chart.

You are adding a new feature that will display the name of a user's manager inside the application.

You need to create a REST query to retrieve the information. The solution must minimize the amount of data retrieved.

Which query should you use?

A. `GET https://graph.microsoft.com/v1.0/users/{UserPricipalName}/manager?$select=displayName`
B. `GET https://graph.microsoft.com/v1.0/users/{UserPrincipalName}/people?$filter=jobTitle eq 'manager'&$select=displayName`
C. `GET https://graph.microsoft.com/v1.0/users/{UserPrincipalName}/contacts?$filter=jobTitle eq 'manager'` D. `GET https://graph.microsoft.com/v1.0/users/{UserPrincipalName}/manager`

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Get user's manager. Returns the user or organizational contact assigned as the user's manager.

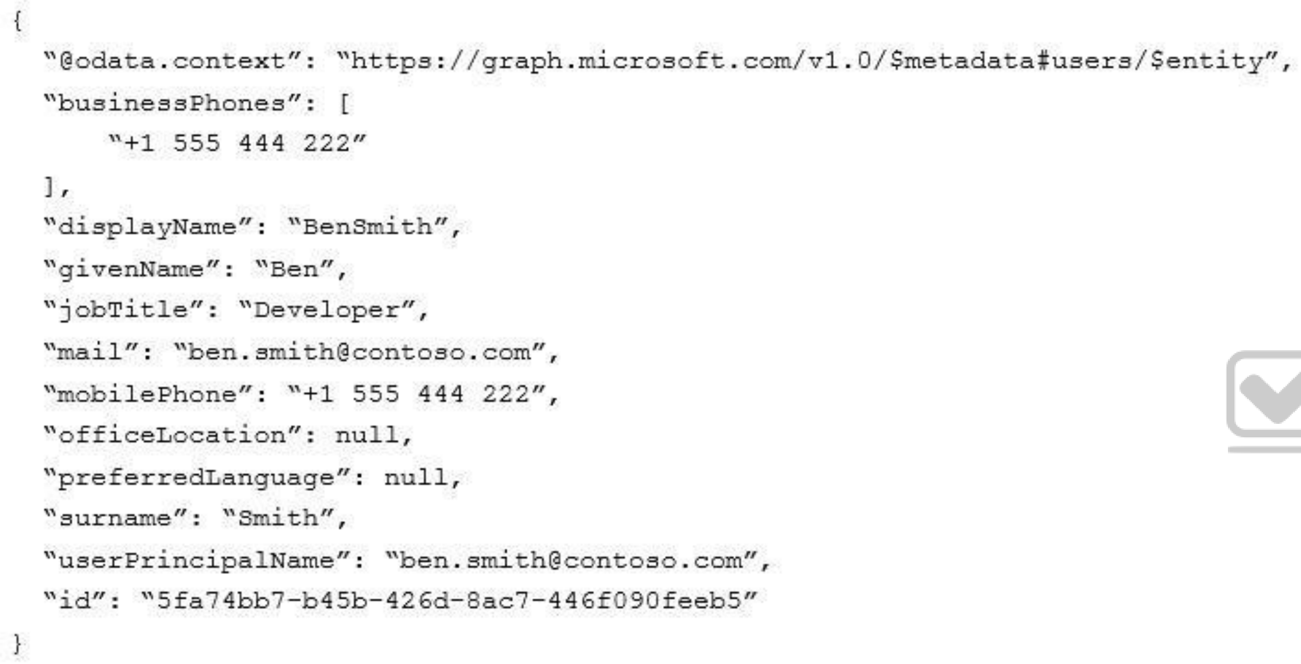
Syntax:
GET /me/manager
GET /users/{id | userPrincipalName}/manager

Only the name of the user's manager should be displayed so we use ?select=displayname
To specify a different set of properties to return than the default set provided by the Graph, use the $select query option. The $select option allows for choosing a subset or superset of the default set returned.

References: https://docs.microsoft.com/en-us/graph/api/user-list-manager https://developer.microsoft.com/en-us/graph/docs/overview/query_parameters

QUESTION 6
HOTSPOT

You receive the following JSON document when you use Microsoft Graph to query the current signed-in user.



```
{
  “@odata.context”: “https://graph.microsoft.com/v1.0/$metadata#users/$entity”,
  “businessPhones”: [
      “+1 555 444 222”
  ],
  “displayName”: “BenSmith”,
  “givenName”: “Ben”,
  “jobTitle”: “Developer”,
  “mail”: “ben.smith@contoso.com”,
  “mobilePhone”: “+1 555 444 222”,
  “officeLocation”: null,
  “preferredLanguage”: null,
  “surname”: “Smith”,
  “userPrincipalName”: “ben.smith@contoso.com”,
  “id”: “5fa74bb7-b45b-426d-8ac7-446f090feeb5”
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes
Syntax: GET /me/photo/$value
Get the specified profilePhoto or its metadata (profilePhoto properties).

Example: Get the photo for the signed-in user in the largest available size GET
https://graph.microsoft.com/v1.0/me/photo/$value

Box 2: Yes
Syntax: GET /users/{id | userPrincipalName}/photo/$value
Get the specified profilePhoto or its metadata (profilePhoto properties).

Box 3: Yes
Syntax: GET /users/{id | userPrincipalName}/photo/$value
Get the specified profilePhoto or its metadata (profilePhoto properties).

Reference: https://docs.microsoft.com/en-us/graph/api/profilephoto-get

QUESTION 7
DRAG DROP

You are developing in application named App1.

App1 needs to use the Microsoft Graph API to retrieve emails from Microsoft 365 for the current signed-in user. The solution must meet the following requirements:

- Emails that have attachments and are from bill@contoso.com must be retrieved.
- The results must show the subject of the email, the sender address, and the count of emails retrieved.

How should you complete the URI to retrieve the results? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Box 1: $count
Use $count as a query parameter to include a count of the total number of items in a collection alongside the page of data values returned from the Graph, as in the following example:

GET https://graph.microsoft.com/v1.0/me/contacts?$count=true

Box 2: $select
To specify a different set of properties to return than the default set provided by the Graph, use the $select query option. The $select option allows for choosing a subset or superset of the default set returned.

Box 3: $filter
To filter the response data based on a set of criteria, use the $filter query option.

The following example returns messages that have the address field of the from property equal to "jon@contoso.com". The from property is of the complex type emailAddress.

GET https://graph.microsoft.com/v1.0/me/messages?$filter=from/emailAddress/address eq 'jon@contoso.com'

Reference: https://developer.microsoft.com/en-us/graph/docs/overview/query_parameters

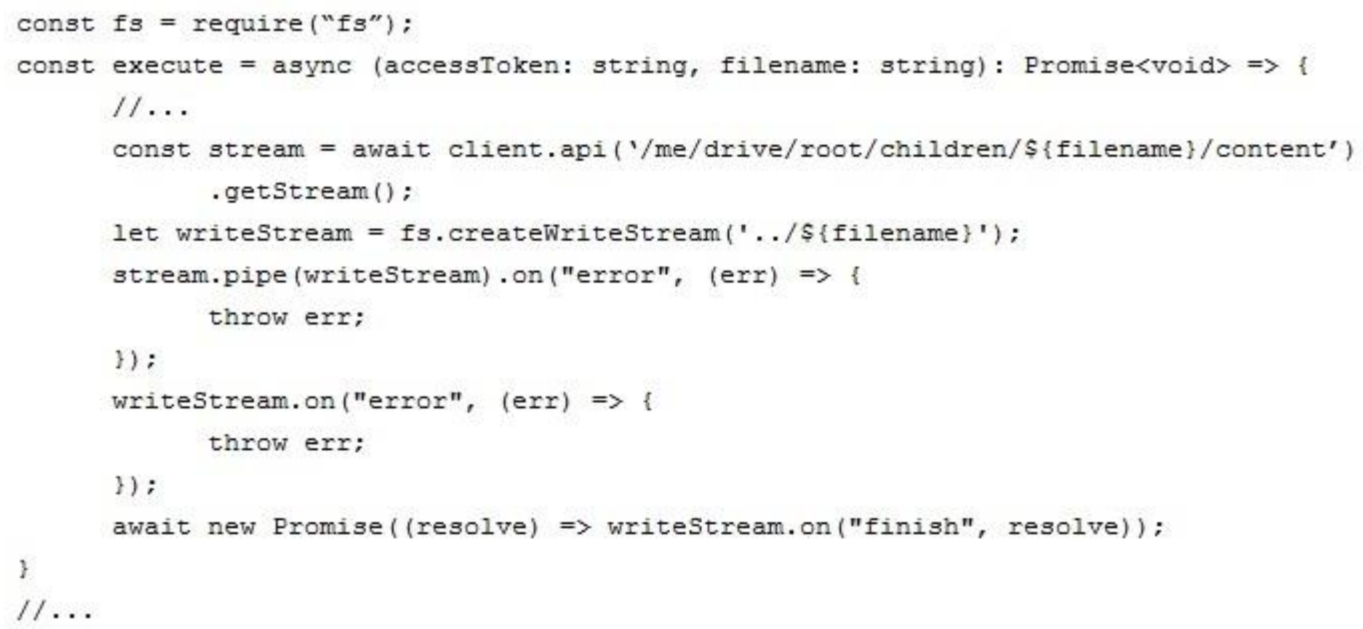
QUESTION 8
HOTSPOT

You have an application that has the code shown in the exhibits. (Click the **JavaScript Version** tab or the **C# Version** tab.) For

each of the following statements, select Yes if the statement is true. Otherwise, select No.

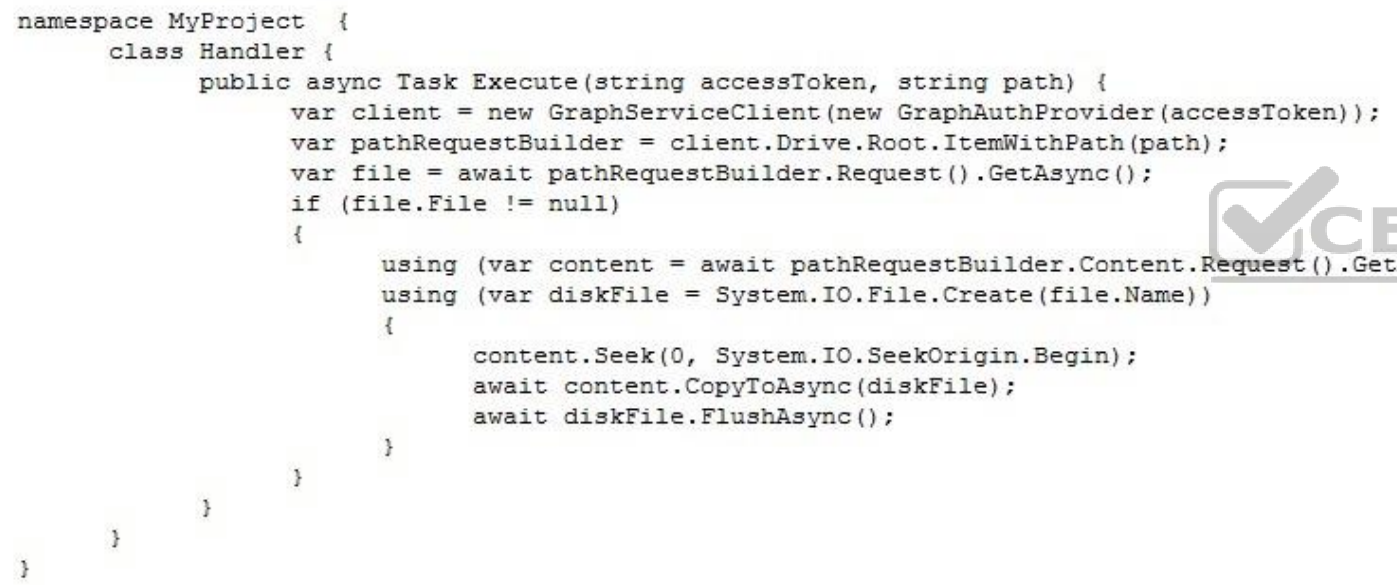
NOTE: Each correct selection is worth one point.

JavaScript Version



```
const fs = require(“fs”);
const execute = async (accessToken: string, filename: string): Promise<void> => {
      //...
      const stream = await client.api(‘/me/drive/root/children/${filename}/content’)
            .getStream();
      let writeStream = fs.createWriteStream('../${filename}');
      stream.pipe(writeStream).on("error", (err) => {
            throw err;
      });
      writeStream.on("error", (err) => {
            throw err;
      });
      await new Promise((resolve) => writeStream.on("finish", resolve));
}
//...
```

C# Version



```
namespace MyProject  {
      class Handler {
            public async Task Execute(string accessToken, string path) {
                  var client = new GraphServiceClient(new GraphAuthProvider(accessToken));
                  var pathRequestBuilder = client.Drive.Root.ItemWithPath(path);
                  var file = await pathRequestBuilder.Request().GetAsync();
                  if (file.File != null)
                  {
                        using (var content = await pathRequestBuilder.Content.Request().GetAsync())
                        using (var diskFile = System.IO.File.Create(file.Name))
                        {
                              content.Seek(0, System.IO.SeekOrigin.Begin);
                              await content.CopyToAsync(diskFile);
                              await diskFile.FlushAsync();
                        }
                  }
            }
      }
}
```

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Box 1: No

Box 2: No

Box 3: Yes
A file is downloaded from OneDrive and saved locally.

Drive/Root is the drive resource is the top level object representing a user's OneDrive or a document library in SharePoint.

Reference: https://docs.microsoft.com/en-us/graph/api/resources/drive

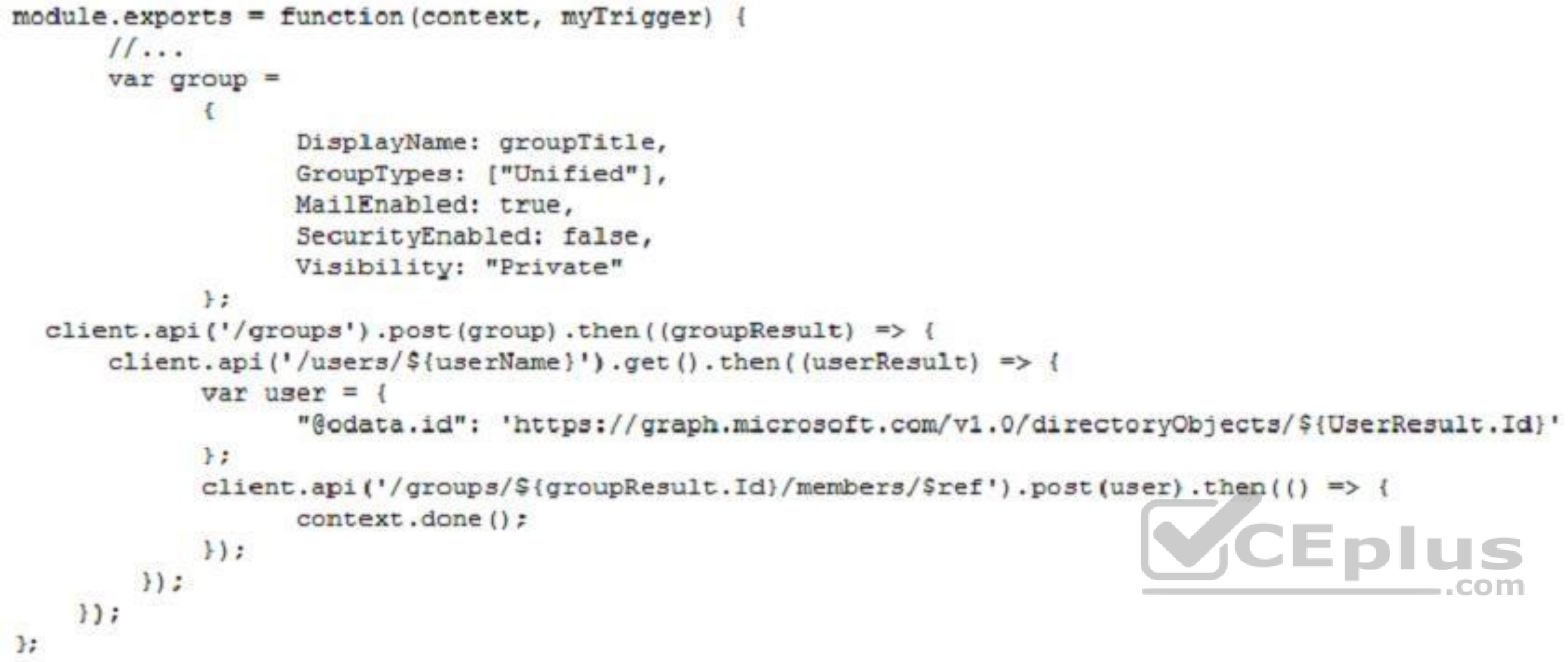
QUESTION 9
HOTSPOT

You have an application that has the code shown in the exhibits. (Click the **JavaScript Version** tab or the **C# Version** tab.)

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

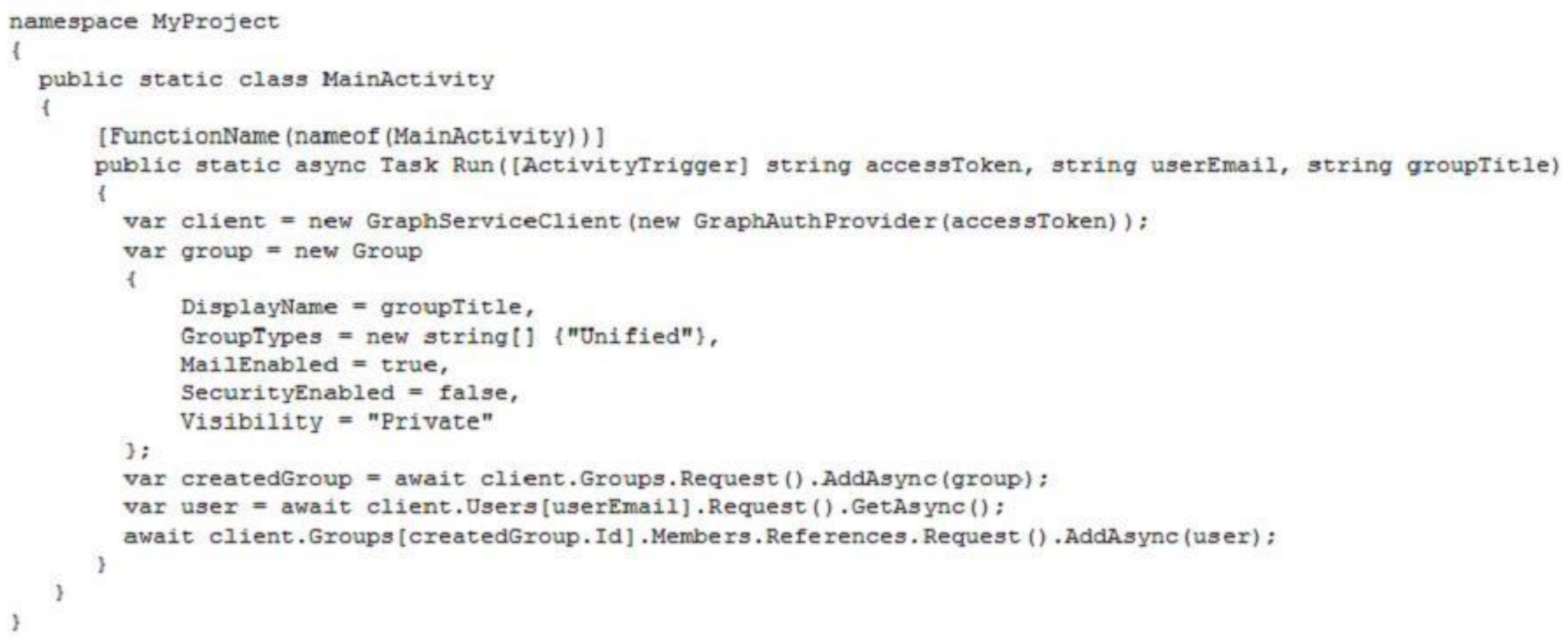
NOTE: Each correct selection is worth one point.

JavaScript Version



```
module.exports = function(context, myTrigger) {
      //...
      var group =
            {
                  DisplayName: groupTitle,
                  GroupTypes: ["Unified"],
                  MailEnabled: true,
                  SecurityEnabled: false,
                  Visibility: "Private"
            };
   client.api('/groups').post(group).then((groupResult) => {
      client.api('/users/${userName}').get().then((userResult) => {
            var user = {
                  "@odata.id": 'https://graph.microsoft.com/v1.0/directoryObjects/${UserResult.Id}'
            };
            client.api('/groups/${groupResult.Id}/members/$ref').post(user).then(() => {
                  context.done();
            });
         });
      });
};
```

C# Version



```
namespace MyProject
{
  public static class MainActivity
  {
      [FunctionName(nameof(MainActivity))]
      public static async Task Run([ActivityTrigger] string accessToken, string userEmail, string groupTitle)
      {
        var client = new GraphServiceClient(new GraphAuthProvider(accessToken));
        var group = new Group
        {
            DisplayName = groupTitle,
            GroupTypes = new string[] {"Unified"},
            MailEnabled = true,
            SecurityEnabled = false,
            Visibility = "Private"
        };
        var createdGroup = await client.Groups.Request().AddAsync(group);
        var user = await client.Users[userEmail].Request().GetAsync();
        await client.Groups[createdGroup.Id].Members.References.Request().AddAsync(user);
      }
   }
}
```

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes
Unified is specified in the code.

Note: You can create the following types of groups:

Office 365 group (unified group)
Security group

Box 2: Yes
A member is added to the group.

Box 3: No

Box 4: No

Reference: https://docs.microsoft.com/en-us/graph/api/group-post-groups

QUESTION 10 You are developing an application that will track changes to the UserPrincipalName attribute of Microsoft 365 accounts.

You need to use a REST request to retrieve the information by using Microsoft Graph. The solution must minimize the amount of data retrieved.

What should you do?

A. Use `GET https://graph.microsoft.com/v1.0/users/delta` for the first call. Use the state token in subsequent calls.

B. Use `GET https://graph.microsoft.com/v1.0/users/delta?$select=UserPrincipalName` for the first call. Use the state token in subsequent calls.

C. Use `GET https://graph.microsoft.com/v1.0/users$select=UserPrincipalName` for the calls and track the changes.

D. Use `GET https://graph.microsoft.com/v1.0/users` for the calls and track the changes.

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Use delta query to track changes in a resource collection
The typical call pattern is as follows:application begins by calling a GET request with the delta function on the desired resource.
1. Microsoft
1. The Graph sends a response containing the requested resource and a state token.

Example: Selecting three properties
The next example shows the initial request selecting three properties for change tracking, with default response behavior.

Note: Delta query enables applications to discover newly created, updated, or deleted entities without performing a full read of the target resource with every request.

Incorrect Answers:
A: Example: Default properties
The following is an example of the request. There is no $select parameter, so a default set of properties is tracked and returned.

Reference: https://docs.microsoft.com/en-us/graph/api/user-delta

Testlet 1

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end on this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information** tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question. **Overview**

ADatum Corporation develops a software as a service (SaaS) application named E-invoicing.

Existing Environment

Application Architecture

E-invoicing consists of a single-page application (SPA) and a backend web service that provides invoice management and processing functionality.

E-invoicing stores all the details of each invoicing operation in a backend cloud database. E-invoicing generates invoices in PDF format and provides users with the ability to download the PDF after it is generated. Each invoice has a unique identifier named invoiceid.

The users have a common workflow where they sign in to E-invoicing, and then open E-invoicing in multiple tabs of a web browser so they can use different parts of the application simultaneously. **Security**

Architecture

ADatum uses the principle of least privilege whenever possible. ADatum always uses the latest libraries and integration endpoints.

Requirements

Business Goals

ADatum wants to integrate E-invoicing, Azure Active Directory (Azure AD), and Microsoft Graph so that their customers can leverage Microsoft Office 365 services directly from within E-invoicing. **Planned**

Changes

ADatum plans to add the following capabilities to E-invoicing:

▪ Email the generated invoices to customers on behalf of the current signed-in user. Any emails generated by the system will contain the invoiced. ▪
Perform as many operations as possible in the browser without having to leave the E-invoicing application. ▪ Use Azure AD to manage identities,
authentication, and authorization. ▪ Display all emails that contain a specific invoiceid.

Technical Requirements

ADatum identifies the following technical requirements for the planned E-invoicing capabilities:

▪ Ensure that all operations performed by E-invoicing against Office 365 are initiated by a user. Require that the user authorize E-invoicing to access the Office 365 data the first time the application attempts to access Office 365 data on the user's behalf.
▪ Send scheduled reminders to customers before a payment due date. Create an administration user interface to enable the scheduled reminders.
▪ Implement Microsoft Graph change notifications to detect emails from vendors that arrive in a designated mailbox. ▪ Implement single sign-on
(SSO) and minimize login prompts across browser tabs.
▪ Secure access to the backend web service by using Azure AD. ▪
Ensure that all solutions use secure coding practices.

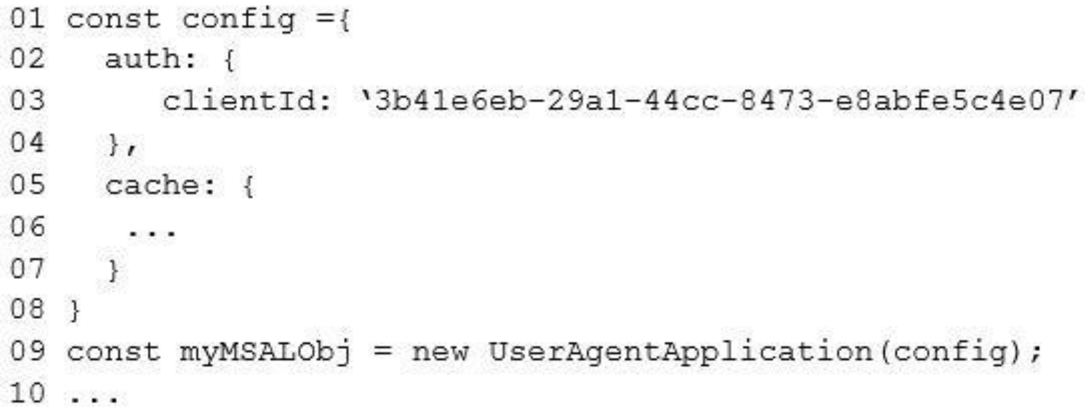
Backend Security Planned Changes

ADatum wants to use custom application roles to map user functionality to permissions granted to users.

E-invoicing will have internal logic that will dynamically identify whether the user should be allowed to call the backend API.

SSO JavaScript Script

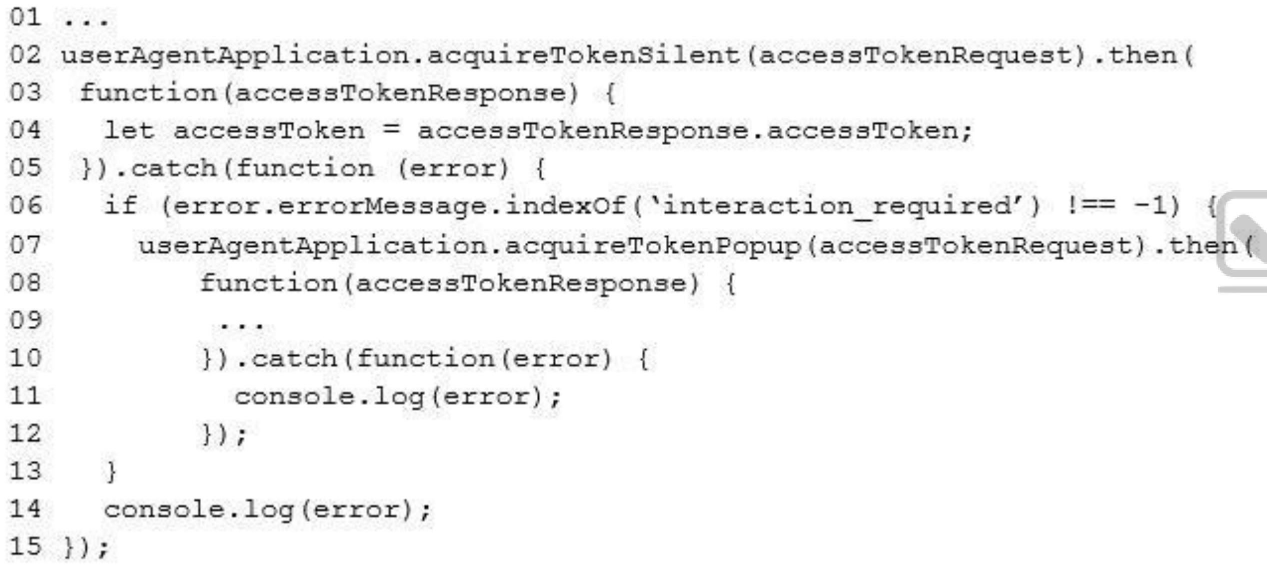
You plan to implement SSO with Microsoft Authentication Library (MSAL) by using the following code:



```
const config ={
  auth: {
     clientId: '3b41e6eb-29a1-44cc-8473-e8abfe5c4e07'
  },
  cache: {
   ...
  }
}
const myMSALObj = new UserAgentApplication(config);
...
```

Access Token JavaScript Script

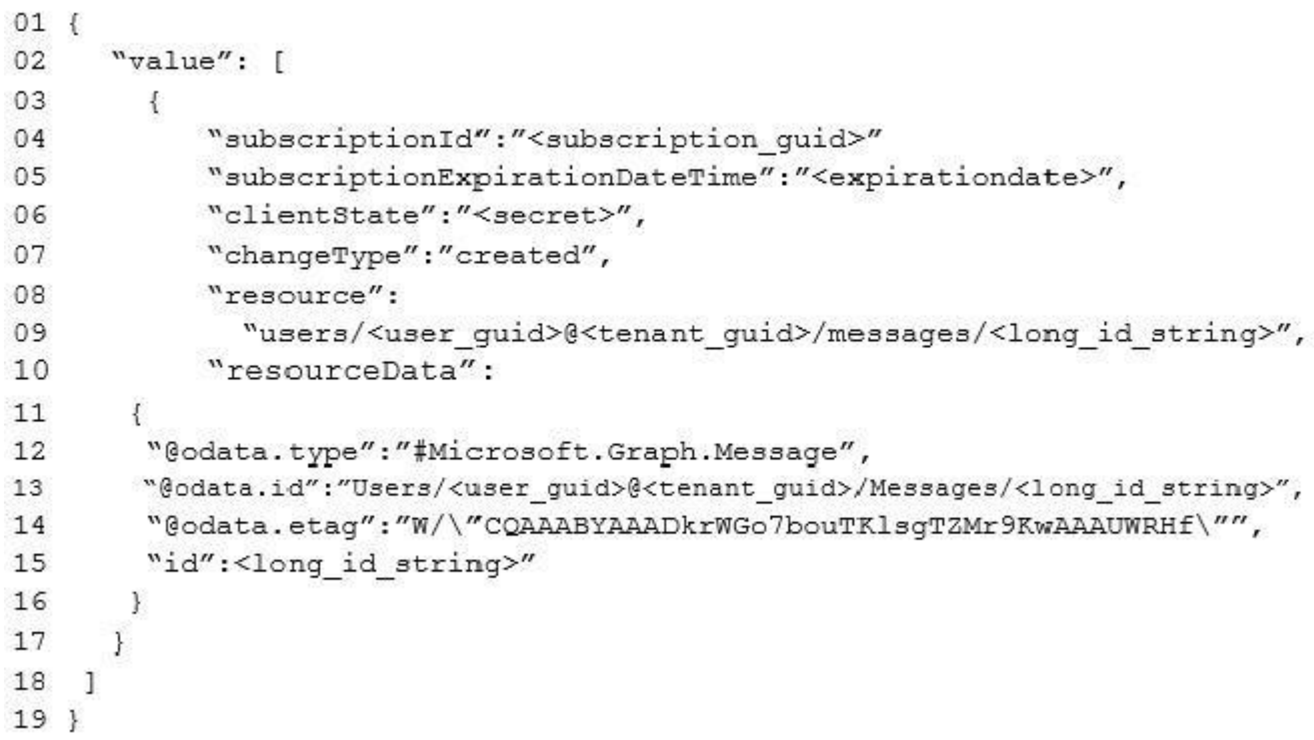
You have the following JavaScript code to obtain an access token.



```
...
userAgentApplication.acquireTokenSilent(accessTokenRequest).then(
 function(accessTokenResponse) {
   let accessToken = accessTokenResponse.accessToken;
 }).catch(function (error) {
   if (error.errorMessage.indexOf('interaction_required') !== -1) {
     userAgentApplication.acquireTokenPopup(accessTokenRequest).then(
         function(accessTokenResponse) {
          ...
         }).catch(function(error) {
           console.log(error);
         });
   }
   console.log(error);
});
```

Change Notification JSON

You have the following JSON message that will be sent by the Microsoft Graph service to detect the vendor emails.



```
{
   "value": [
     {
        "subscriptionId":"<subscription_guid>"
        "subscriptionExpirationDateTime":"<expirationdate>",
        "clientState":"<secret>",
        "changeType":"created",
        "resource":
          "users/<user_guid>@<tenant_guid>/messages/<long_id_string>",
        "resourceData":
    {
     "@odata.type":"#Microsoft.Graph.Message",
     "@odata.id":"Users/<user_guid>@<tenant_guid>/Messages/<long_id_string>",
     "@odata.etag":"W/\"CQAAABYAAADkrWGo7bouTKlsgTZMr9KwAAAUWRHf\"",
     "id":<long_id_string>"
    }
   }
 ]
}
```

QUESTION 1 Which type of authentication flow should you recommend for the planned integration with Office 365?

A. device code
B. implicit grant
C. authorization code
D. client credentials

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
To use Microsoft Graph to read and write resources on behalf of a user, your app must get an access token from the Microsoft identity platform and attach the token to requests that it sends to Microsoft Graph.

One common flow used by native and mobile apps and also by some Web apps is the OAuth 2.0 authorization code grant flow.

Scenario: Email the generated invoices to customers on behalf of the current signed-in user. Any emails generated by the system will contain the invoiced. Use Azure AD to manage identities, authentication, and authorization.

Reference: https://docs.microsoft.com/en-us/graph/auth-v2-user

Question Set 2

QUESTION 1
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a new application named App1 that uses the Microsoft identity platform to authenticate to Azure Active Directory (Azure AD).

Currently, App1 can read user profile information.

You need to allow App1 to read the user's calendar.

Solution: From the Azure portal, add the Microsoft Graph API and the Calendar.Read permission by using the API permission list of App1. Grant tenant admin consent.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Microsoft Graph Calendars.Read allows the app to read events in user calendars.
For your app to access data in Microsoft Graph, the user or administrator must grant it the correct permissions via a consent process.

Application permissions are used by apps that run without a signed-in user present; for example, apps that run as background services or daemons. Application permissions can only be consented by an administrator.

References: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-permissions-and-consent https://docs.microsoft.com/en-us/graph/permissions-reference

QUESTION 2
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a new application named App1 that uses the Microsoft identity platform to authenticate to Azure Active Directory (Azure AD).

Currently, App1 can read user profile information.

You need to allow App1 to read the user's calendar.

Solution: Add `https://graph.windows.net/user.read` to the list of scopes during the initial login request.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Microsoft Graph Calendars.Read allows the app to read events in user calendars.
For your app to access data in Microsoft Graph, the user or administrator must grant it the correct permissions via a consent process.

Application permissions are used by apps that run without a signed-in user present; for example, apps that run as background services or daemons. Application permissions can only be consented by an administrator.

References: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-permissions-and-consent https://docs.microsoft.com/en-us/graph/permissions-reference

QUESTION 3
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a new application named App1 that uses the Microsoft identity platform to authenticate to Azure Active Directory (Azure AD).

Currently, App1 can read user profile information.

You need to allow App1 to read the user's calendar.

Solution: In the code of App1, dynamically request the Calendar.Read permission from the Microsoft Graph API.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
For your app to access data in Microsoft Graph, the user or administrator must grant it the correct permissions via a consent process.

Application permissions can only be consented by an administrator.

References: https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-permissions-and-consent https://docs.microsoft.com/en-us/graph/permissions-reference

QUESTION 4 You are developing a SharePoint Framework (SPFx) web part.

Which API should you use to retrieve the Microsoft Teams memberships of a user by using the minimum amount of code?

A. `MSGraphClient`
B. `AadHttpClient`
C. `SPHttpClient`
D. `XMLHttpRequest`

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
You can use the Microsoft Graph API to work with Microsoft Teams. In Microsoft Graph, Microsoft Teams is represented by a group resource.
If you are targeting Microsoft Graph, you can use the MSGraphClient client object, which provides a more fluent syntax compared to AadHttpClient.

Note: In versions of the SharePoint Framework starting with v.1.4.1, you can access Microsoft Graph by using either the native graph client (MSGraphClient), or the low-level type used to access any Azure AD-secured REST API (AadHttpClient).

The AadHttpClient client object is useful for consuming any REST API. You can use it to consume Microsoft Graph or any other third-party (or first-party) REST API.

The MSGraphClient client object can consume the Microsoft Graph only. Internally it uses the AadHttpClient client object and supports the fluent syntax of the Microsoft Graph SDK.

References: https://docs.microsoft.com/en-us/graph/api/resources/teams-api-overview?view=graph-rest-1.0 https://docs.microsoft.com/en-us/sharepoint/dev/spfx/use-aad-tutorial

QUESTION 5 You plan to deploy a SharePoint Framework (SPFx) solution to the tenant app catalog.

Which attribute should you configure in the package-solution.json file to ensure that the solution is available immediately to all site collections?

A. `skipFeatureDeployment`
B. `zippedPackage`

C. `ClientSideComponentId`
D. `isDomainIsolated`

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
You can configure your SharePoint Framework components to be immediately available across the tenant when the solution package is installed to the tenant app catalog. This can be configured by using the skipFeatureDeployment attribute in the package-solution.json file.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/tenant-scoped-deployment

QUESTION 6
What should you add to a SharePoint Framework (SPFx) solution to ensure that the solution can be used as a Microsoft Teams tab?

A. the `TeamsTab` value to the `componentType` property in the manifest file
B. a manifest file to the Teams folder in the solution
C. the `TeamsTab` value to the `supportedHosts` property in the manifest file D. a manifest file to the webparts folder in the solution

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
You need to update the web part manifest to make it available for Microsoft Teams. Locate the manifest json file for the web part you want to make available to Teams and modify the supportedHosts properties to include "TeamsTab".

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/web-parts/get-started/using-web-part-as-ms-teams-tab

QUESTION 7 Which tool can you use to generate a SharePoint Framework (SPFx) solution?

A. Eclipse
B. App Studio
C. Yacc
D. Yeoman

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Yeoman helps you to kickstart new projects, prescribing best practices and tools to help you stay productive. Using the Yeoman SharePoint generator, developers are able to scaffold new client-side solution projects to build, package, and deploy SharePoint solutions. The generator provides common build tools, boilerplate code, and a common playground website to host web parts for testing.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/toolchain/scaffolding-projects-using-yeoman-sharepoint-generator

QUESTION 8 You have a line-of-business API that is secured by using Azure Active Directory (Azure AD).

You deploy a solution to the app catalog. The solution requests permission to the API.

What should you do in the SharePoint admin center to ensure that the solution can access the API?

A. Create a SharePoint security group and add the solution

B. Create an access policy
C. Enable sandbox solutions
D. Approve a pending permission request

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Developers building a SharePoint Framework solution that requires access to specific resources secured with Azure AD list these resources along with the required permission scopes in the solution manifest. When deploying the solution package to the app catalog, SharePoint creates permission requests and prompts the administrator to manage the requested permissions. For each requested permission, tenant administrators can decide whether they want to grant or deny the specific permission.

All permissions are granted to the whole tenant and not to a specific application that has requested them. When the tenant administrator grants a specific permission, it is added to the SharePoint Online Client Extensibility Azure AD application, which is provisioned by Microsoft in every Azure AD and which is used by the SharePoint Framework in the OAuth flow to provide solutions with valid access tokens.

QUESTION 9
You are designing a custom SharePoint Framework (SPFx) web part that will be deployed to modern Microsoft SharePoint sites.

You need to ensure that all the web part fields and controls adopt the theme of the site when you deploy the web part.

What should you use to develop the web part?

A. Material-UI
B. Office UI Fabric React
C. HTML 5.0 and CSS
D. Fluid Framework

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Office UI Fabric is Microsoft's official front end framework for building User Interface experiences for Office and Office 365. In simple terms it gives you the look and feel for your component. Moreover, they are open source, mobile responsive and reusable, no need to create from scratch just refer them in your code and start utilizing them.

Microsoft modern SharePoint out of the box webparts are made up these Office UI Fabric framework, so to maintain consistency look and feel as like Office it's better to use these components in our custom SPFx webparts.

Incorrect Answers:
D: At Build 2019 [November 2019], Microsoft announced Fluid Framework, a new technology and set of experiences that will make collaboration seamless by breaking down the barriers between apps. It offers three key capabilities. First, experiences powered by the Fluid Framework will support multi-person coauthoring on web and document content at industry-leading speed and scale. Second, it provides a componentized document model that allows authors to deconstruct content into collaborative building blocks, use them across applications, and combine them in a new, more flexible kind of document. Third, the Fluid Framework makes room for intelligent agents to work alongside humans to translate text, fetch content, suggest edits, perform compliance checks, and more.

Reference: http://www.sharepointsamples.com/sharepoint-framework-webpart-with-office-ui-fabric-react-component/

QUESTION 10
HOTSPOT

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes
Using the isolated web parts capability, you can build web parts that securely communicate with APIs secured with Azure AD without exposing the access token to other components on the page or even scripts in the tenant. When deploying these solutions to the app catalog, all API permission requests are specified as isolated.

Box 2: Yes
Even though on runtime isolated web parts will be loaded inside an iframe pointing to a unique domain, you can communicate with SharePoint REST API, the same way as you would in non-isolated web parts.

Box 3: Yes
If you're upgrading an existing SharePoint Framework project to v1.8.0 and want to use the isolated permissions capability, you can do it, by setting in the config/package-solution.json file, the isDomainIsolated property to true. You should ensure, that your project contains only web parts.

After changing the project to use isolated permissions, you should redeploy your project. This will issue new API permission requests, isolated to your solution, which will need to be approved by the tenant admin.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/web-parts/isolated-web-parts

QUESTION 11 You have a SharePoint Framework (SPFx) 1.5 solution.

You need to ensure that the solution can be used as a tab in Microsoft Teams.

What should you do first?

A. Convert the solution to use the Bot Framework
B. Deploy the solution to a developer site collection
C. Deploy the solution to the Microsoft AppSource store
D. Upgrade the solution to the latest version of SPFx

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Starting with the SharePoint Framework v1.8, you can implement your Microsoft Teams tabs using SharePoint Framework.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/web-parts/get-started/using-web-part-as-ms-teams-tab

QUESTION 12
HOTSPOT

You are evaluating the SharePoint Framework (SPFx) ListView Command Set extension.

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes
Extensions are client-side components that run inside the context of a SharePoint page.

Box 2: Yes
ClientSideExtension.ListViewCommandSet.CommandBar: The top command set menu in a list or library.

Box 3: Yes
ClientSideExtension.ListViewCommandSet.ContextMenu: The context menu of the item(s).

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/extensions/get-started/building-simple-cmdset-with-dialog-api

QUESTION 13 You have an API that is secured by using Azure Active Directory (Azure AD).

You are designing a SharePoint Framework (SPFx) solution.

Which object should you use to connect to the API from the solution?

A. `SPHttpClient`
B. `HttpClient`
C. `AadHttpClient`

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
By using the AadHttpClient, you can easily connect to APIs secured by using Azure AD without having to implement the OAuth flow yourself. Reference:

https://docs.microsoft.com/en-us/sharepoint/dev/spfx/use-aadhttpclient

QUESTION 14 What is the default permission scope when you request an access token by using MSGraphClient?

A. `User.Read`
B. `People.Read.All`
C. `People.Read`
D. `User.Read.All`

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
By default, the service principal has no explicit permissions granted to access the Microsoft Graph. However, if you request an access token for the Microsoft Graph, you get a token with the user_impersonation permission scope that can be used for reading information about the users (that is, User.Read.All).

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/use-msgraph

QUESTION 15 You have a starter SharePoint Framework (SPFx) web part.

You need to test the web part from the local workbench by connecting to a URL of `https://localhost:4321/temp/workbench.html`.

Which tool should you use make the web part available locally for debugging?

A. Yeoman

B. Microsoft Visual Studio Code

C. `npm install`

D. `gulp serve`

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
By setting up debugging of your SharePoint Framework solution in Visual Studio Code, you can more efficiently step through your code and fix errors.

When building SharePoint Framework solutions, you can use the local workbench to verify that your web part is working correctly. Using the local workbench is convenient for testing all scenarios that do not require communicating with SharePoint as well as for offline development.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/debug-in-vscode

QUESTION 16 This question requires that you evaluate the underlined text to determine if it is correct.

You can use a Command Set extension to develop a breadcrumb element that will appear on every Microsoft SharePoint page.

Instructions: Review the underlined text. If it makes the statement correct, select “No change is needed”. If the statement is incorrect, select the answer choice that makes the statement correct.

A. No change is needed
B. an Application Customizer
C. a Field Customizer
D. a web part

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Application Customizers provide access to well-known locations on SharePoint pages that you can modify based on your business and functional requirements. For example, you can create dynamic header and footer experiences that render across all the pages in SharePoint Online.

Reference: https://docs.microsoft.com/en-us/sharepoint/dev/spfx/extensions/get-started/using-page-placeholder-with-extensions

Question Set 1

QUESTION 1

You are developing a Microsoft Teams solution to host an existing webpage as a Teams tab.

Which requirement must the page meet?

A. The page must adhere to HTML 5.0 standards
B. The page must adhere to WCAG 2.0 accessibility guidelines
C. The page must be hosted on a domain that is on the validDomains list of the manifest
D. The page must use CSS3 stylesheets

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:

Make sure that all domains used in your tab pages are listed in the manifest.json validDomains array.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/tabs/how-to/create-tab-pages/configuration-page

QUESTION 2
You are designing a Microsoft Teams application. The application will enable content authors to start conversations about news coming from a third-party application.

Which development technique should you use?

A. incoming webhooks
B. outgoing webhooks
C. activity feeds
D. deep links

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Create deep links to content and features in Microsoft Teams.
You can create links to information and features within the Teams client. Examples of where this may be useful:
▪ Your app automates or simplifies certain user tasks, such as creating a chat or scheduling a meeting, by pre-populating the deep links with required parameters. This avoids the need for users to manually enter information. ▪ Navigating the user to content within one of your app's tabs.

Incorrect Answers:
A: Incoming webhooks are the simplest type of connector. Connectors allow users to subscribe to receive notifications and messages from your web services

B: Outgoing webhooks allow your users to send text messages from a channel to your web services. Once configured, your users will be able to @mention your outgoing webhook.

C: The activity feed in Microsoft Teams is the user's single inbox for all activity across Teams. The feed aggregates important content.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/concepts/build-and-test/deep-links

QUESTION 3
HOTSPOT

You are evaluating deep links in Microsoft Teams.

For each of the following statement, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: No

Box 2: Yes

Box 3: Yes

You can create links to information and features within the Teams client. Examples of where this may be useful:

- Navigating the user to content within one of your app's tabs. For instance, your app may have a bot that sends messages notifying the user of an important activity. When the user taps on the notification, the deep link navigates to the tab so the user can view more details about the activity.
- Your app automates or simplifies certain user tasks, such as creating a chat or scheduling a meeting, by pre-populating the deep links with required parameters. This avoids the need for users to manually enter information.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/concepts/build-and-test/deep-links

QUESTION 4 You company has a third-party
invoicing web app.

You need to display the app within Microsoft Teams for one user only. The app will not require conversational interactions.

How should you display the app by using the minimum amount of effort?

A. Instruct the user to add a website tab
B. Instruct the user to add an App Studio app
C. Create a SharePoint Framework (SPFx) web part
D. Create a search-based messaging extension

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
There are currently three methods of app integration in Teams: Connectors, Bots, and Tabs. Tabs offer more extensive integration by allowing you to view entire third-party services within Microsoft Teams.

Reference: https://www.sherweb.com/blog/office-365/o365-microsoft-teams-apps/

QUESTION 5 This question requires that you evaluate the underlined text to determine if it is correct.

You develop a Microsoft Teams application that uses a messaging extension.

Users can invoke the messaging extension from the Teams sidebar menu.

Instructions: Review the underlined text. If it makes the statement correct, select “No change is needed”. If the statement is incorrect, select the answer choice that makes the statement correct.

A. No change is needed
B. from the compose box of a Teams chat
C. by using the Manage teams option for a team
D. by using the Add a tab option in the Teams channel

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
In the app manifest for your Microsoft Teams app you'll define a single messaging extension with up to ten different commands. Each command defines a type (action or search), and the locations in the client it can be invoked from (compose message area, command bar, and/or message).

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/messaging-extensions/what-are-messaging-extensions

QUESTION 6 This question requires that you evaluate the underlined text to determine if it is correct.

You can use App Studio for Microsoft Teams to develop all the components of a bot application.

Instructions: Review the underlined text. If it makes the statement correct, select “No change is needed”. If the statement is incorrect, select the answer choice that makes the statement correct.

A. No change is needed
B. configure a Teams tab in an application
C. develop a SharePoint Framework (SPFx) web part
D. provision a bot by using the Bot Framework

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Tabs provide a place for you to display for rich interactive web content. You can define both personal and team tabs.

There can be only 1 team tab per app, but up to 16 personal tabs per app.

Incorrect Answers:
D: Bots that you create in Microsoft Bot Framework can be specified in an App manifest and included as Teams Apps.

Reference: https://blog.thoughtstuff.co.uk/2019/04/what-is-app-studio-in-microsoft-teams-and-why-do-i-care/

QUESTION 7 You are developing a Microsoft Teams application for a support staff.

Within a conversation between the support staff, you want the staff to look up support ticket IDs from a list without opening the ticketing system.

Which feature should the application include?

A. a bot
B. a connector
C. a messaging extension
D. a tab

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Messaging extensions allow users to interact with your web service through buttons and forms in the Microsoft Teams client. They can search, or initiate actions, in an external system from the compose message area, the command box, or directly from a message. You can then send the results of that interaction back to the Microsoft Teams client, typically in the form of a richly formatted card.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/messaging-extensions/what-are-messaging-extensions

QUESTION 8
You plan to integrate a web-based support ticketing system and Microsoft Teams.

You need to recommend a solution that will prompt users for specific information before a ticket is created. The solution must minimize development effort.

What should you include in the recommendation?

A. outgoing webhooks
B. incoming webhooks
C. a notification-only bot
D. a conversational bot

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Webhooks are a great way for Teams to integrate with external apps. A webhook is essentially a POST request sent to a callback URL. In Teams, outgoing webhooks provide a simple way to allow users to send messages to your web service without having to go through the full process of creating bots via the Microsoft Bot Framework. Outgoing webhooks post data from Teams to any chosen service capable of accepting a JSON payload. Once an outgoing webhook is added to a team, it acts like bot, listening in channels for messages using @mention, sending notifications to external web services, and responding with rich messages that can include cards and images.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/webhooks-and-connectors/how-to/add-outgoing-webhook

QUESTION 9
HOTSPOT

You are building a Microsoft Teams application.

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Box 1: Yes
Once an outgoing webhook is added to a team, it acts like bot, listening in channels for messages using @mention, sending notifications to external web services, and responding with rich messages that can include cards and images.

Box 2: Yes
Webhooks are a great way for Teams to integrate with external apps. A webhook is essentially a POST request sent to a callback URL. In Teams, outgoing webhooks provide a simple way to allow users to send messages to your web service without having to go through the full process of creating bots via the Microsoft Bot Framework. Outgoing webhooks post data from Teams to any chosen service capable of accepting a JSON payload.

Box 3: Yes
Create an outgoing webhook
1. Select the appropriate team and select Manage team from the (•••) drop-down menu.
2. Choose the Apps tab from the navigation bar.
3. From the window's lower right corner select Create an outgoing webhook.
4. In the resulting popup window complete the required fields:
- Name - The webhook title and @mention tap.
- Callback URL - The HTTPS endpoint that accepts JSON payloads and will receive POST requests from Teams.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/webhooks-and-connectors/how-to/add-outgoing-webhook

QUESTION 10
HOTSPOT

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

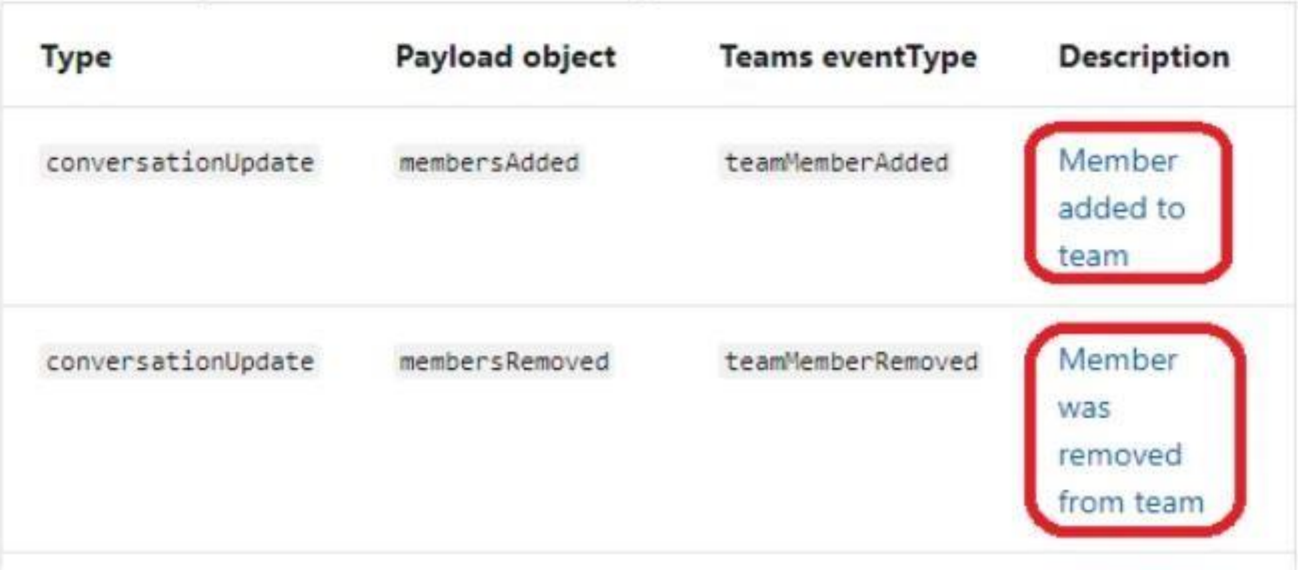
Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: No

Box 2: Yes
Partial table lists the events that your bot can receive and take action on.



Type	Payload object	Teams eventType	Description
`conversationUpdate`	`membersAdded`	`teamMemberAdded`	Member added to team
`conversationUpdate`	`membersRemoved`	`teamMemberRemoved`	Member was removed from team

Box 3: Yes
The messageReaction event is sent when a user adds or removes his or her reaction to a message which was originally sent by your bot.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/resources/bot-v3/bots-notifications

Question Set 1

QUESTION 1

This question requires that you evaluate the underlined text to determine if it is correct.

Centralized deployments for Microsoft Office Add-ins require Office Online Server.

Instructions: Review the underlined text. If it makes the statement correct, select “No change is needed”. If the statement is incorrect, select the answer choice that makes the statement correct.

A. No change is needed
B. Azure Active Directory (Azure AD)
C. Azure AD Connect
D. an Azure web app

Correct Answer: A
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Centralized deployment of add-ins requires that the users are using Office 365 ProPlus (and are signed into Office using their Organizational ID), and have Exchange Online and active Exchange Online mailboxes.

Reference: https://docs.microsoft.com/en-us/office365/admin/manage/centralized-deployment-of-add-ins

QUESTION 2
You have an invoice approval process in which an approver is sent an automated email that contains a link to a web-based accounts system whenever an invoice requires approval.

Which benefit can be achieved by using actionable messages for the approval process?

A. The approver can delegate invoice approvals to other users by forwarding actionable messages
B. Invoices can be approved directly from Microsoft Outlook by using actionable messages

C. Actionable messages will work in any email client
D. Actionable messages can provide detailed auditing of all the approved invoices and can be viewed in a rollup report

Correct Answer: B
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Whether you are filling out a survey, approving an expense report, or updating a CRM sales opportunity, Actionable Messages enable you to take quick actions right from within Outlook. Developers can now embed actions in their emails or notifications, elevating user engagement with their services and increasing organizational productivity. Reference: https://docs.microsoft.com/en-us/outlook/actionable-messages/

QUESTION 3
You need to develop an add-in for Microsoft Excel that can be used from the Windows, Mac, and web versions of Excel.

What are two ways to develop the add-in? Each correct answer presents a complete solution?

NOTE: Each correct selection is worth one point.

A. From Microsoft Teams, install App Studio
B. From Microsoft Visual Studio that has the Microsoft Office/SharePoint development workload installed, create a new project that uses a Web Add-in templateC. From the Microsoft Office 365 portal, use Microsoft PowerApps
D. Use the Yeoman generator for Microsoft Office Add-ins to create the project, and then open the project in Microsoft Visual Studio Code
E. From Microsoft Visual Studio that has the Microsoft Office/SharePoint development workload installed, create a new project that uses a Visual Studio Tools for Office (VSTO) template

Correct Answer: DE
Section: [none]
Explanation

Explanation/Reference:
Explanation:
D: Run the following command to create an add-in project using the Yeoman generator: yo

office

Visual Studio Code is a great tool to help you develop your custom Office Add-ins regardless if they are for Outlook, Word, Excel, PowerPoint and run in the web clients, Windows clients, iOS clients or on macOS.
Open the project in Visual Studio Code by entering the following on the command line from within the same folder where you ran the generator: code.

E: You can create VSTO Add-ins for Excel.
To create a new Excel VSTO Add-in project in Visual Studio 5.
Start Visual Studio.
6. On the File menu, point to New, and then click Project.
7. In the templates pane, expand Visual C# or Visual Basic, and then expand Office/SharePoint.
8. Under the expanded Office/SharePoint node, select the Office Add-ins node.
9. In the list of project templates, select Excel 2010 Add-in or Excel 2013 Add-in.
10.In the Name box, type FirstExcelAddIn.
11.Click OK.

Visual Studio creates the FirstExcelAddIn project and opens the ThisAddIn code file in the editor. References:

https://docs.microsoft.com/en-us/office/dev/add-ins/tutorials/excel-tutorial

https://code.visualstudio.com/docs/other/office#_use-visual-studio-code-to-develop-your-office-addin

https://docs.microsoft.com/en-us/visualstudio/vsto/walkthrough-creating-your-first-vsto-add-in-for-excel

QUESTION 4 You have a custom Microsoft Word add-in that was written by using Microsoft Visual Studio Code.

A user reports that there is an issue with the add-in.

You need to debug the add-in for Word Online.

What should you do before you begin debugging in Visual Studio Code?

A. Disable script debugging in your web browser
B. Sideload the add-in
C. Publish the manifest to the Microsoft SharePoint app catalog
D. Add the manifest path to the trusted catalogs

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Debug your add-in from Excel or Word on the web
To debug your add-in by using Office on the web (see step 3):
12.Deploy your add-in to a server that supports SSL.
13.In your add-in manifest file, update the SourceLocation element value to include an absolute, rather than a relative, URI.
14.Upload the manifest to the Office Add-ins library in the app catalog on SharePoint.
15.Launch Excel or Word on the web from the app launcher in Office 365, and open a new document.
16.On the Insert tab, choose My Add-ins or Office Add-ins to insert your add-in and test it in the app.
17.Use your favorite browser tool debugger to debug your add-in.

Reference: https://docs.microsoft.com/en-us/office/dev/add-ins/testing/debug-add-ins-in-office-online

QUESTION 5 You are developing a new Microsoft Office Add-in to integrate a corporate invoicing system and Microsoft Excel.

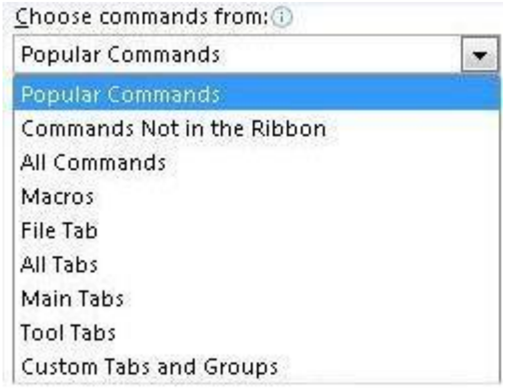
You need to add a new button to the Office ribbon.

What should you add to the add-in?

A. a task pane
B. a dialog
C. a custom function
D. a command

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Add commands to a custom group
1. In the Customize the Ribbon window under the Customize the Ribbon list, click the custom group that you want to add a command to.
2. In the Choose commands from list, click the list you want to add commands from, for example, Popular Commands or All Commands.



Choose commands from: Popular Commands

3. Click a command in the list that you choose.
4. Click Add.
5. To see and save your changes, click OK.

Reference: https://support.office.com/en-us/article/customize-the-ribbon-in-office-00f24ca7-6021-48d3-9514-a31a460ecb31

QUESTION 6 You are building a Microsoft
Outlook Web Add-in.

You need to persist user preferences between devices by using the minimum amount of development effort.

Which API should you use?

A. the Microsoft Graph API
B. the REST API for the Blob service
C. the JavaScript API for Microsoft Office
D. the Table service REST API

Correct Answer: C
Section: [none]
Explanation

Explanation/Reference:
Explanation:
You can persist add-in state and settings with the JavaScript API for Office.
The JavaScript API for Office provides the Settings, RoamingSettings, and CustomProperties objects for saving add-in state across sessions

Reference: https://docs.microsoft.com/en-us/office/dev/add-ins/develop/persisting-add-in-state-and-settings

QUESTION 7
HOTSPOT

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes

As part of your app you can add custom tabs to embed your own web content in Teams, and using the Teams JavaScript client SDK, add Teams-specific functionality to your web content.

Box 2: Yes
You can use the Office JavaScript API to create task pane or content add-ins for Office 2013 host applications.

Box 3: Yes
You can use the Office JavaScript API to create task pane or content add-ins for Office 2013 host applications.

Reference: https://docs.microsoft.com/en-us/microsoftteams/platform/tabs/what-are-tabs

https://docs.microsoft.com/en-us/office/dev/add-ins/develop/support-for-task-pane-and-content-add-ins

QUESTION 8 You are building email notifications for an expensing system.

When a user receives an email notification, the email will contain a comment field. When the user submits a comment, the data will be returned to the expensing system for processing.

What should you do to implement the notification by using the minimum amount of development effort?

A. Create a Microsoft Office Add-in that has an action pane to display the notifications
B. Leverage Microsoft Graph notifications
C. Leverage the Azure SignalR Service and implement web notifications
D. Configure the expensing system to send actionable messages

Correct Answer: D
Section: [none]
Explanation

Explanation/Reference:
Explanation:
Whether you are filling out a survey, approving an expense report, or updating a CRM sales opportunity, Actionable Messages enable you to take quick actions right from within Outlook. Developers can now embed actions in their emails or notifications, elevating user engagement with their services and increasing organizational productivity.

Office 365 provides two solutions to enhance productivity with Outlook Actionable Messages: actionable messages via email, and actionable messages via Office 365 Connectors. Reference:

https://docs.microsoft.com/en-us/outlook/actionable-messages/

QUESTION 9
HOTSPOT

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:
Box 1: No

Box 2: No
The manifest is in XML format.

Box 3: Yes

SourceLocation is required and specifies the source file location(s) for your Office Add-in as a URL between 1 and 2018 characters long. The source location must be an HTTPS address, not a file path.

References: https://docs.microsoft.com/en-us/office/dev/add-ins/develop/add-in-manifests https://docs.microsoft.com/en-us/office/dev/add-ins/reference/manifest/sourcelocation

QUESTION 10
HOTSPOT

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

Section: [none]
Explanation

Explanation/Reference:
Explanation:

Box 1: Yes
The Adaptive Cards Designer provides a drag-and-drop experience to quickly build and tweak adaptive cards.

Outlook Actionable Messages cards are designed using the Adaptive Card format. The Adaptive Card format is a simple yet powerful declarative layout format that provides a lot of flexibility, allowing for visually rich cards. In this topic we'll cover the Outlook-specific features of the Adaptive Card format.

Box 2: Yes
The actionable message card is in JSON format.

Box 3: No
By default, the Tenant Administrator can create, edit, clone, and delete tenants, and manage user accounts.

Note:
To enable Actionable Messages the recipient of the task must be an Office 365 customer with permissions for the SharePoint online site.

No: Office 365 administrators can disable actionable messages via the Set-OrganizationConfig cmdlet. If actionable messages do not render, check with your administrator to make sure the feature is enabled in your organization.

Adaptive Cards Designer Microsoft outlook actionable messages

References: https://docs.microsoft.com/en-us/outlook/actionable-messages/adaptive-card https://gingkoapp.com/create-tenant-administrator.html